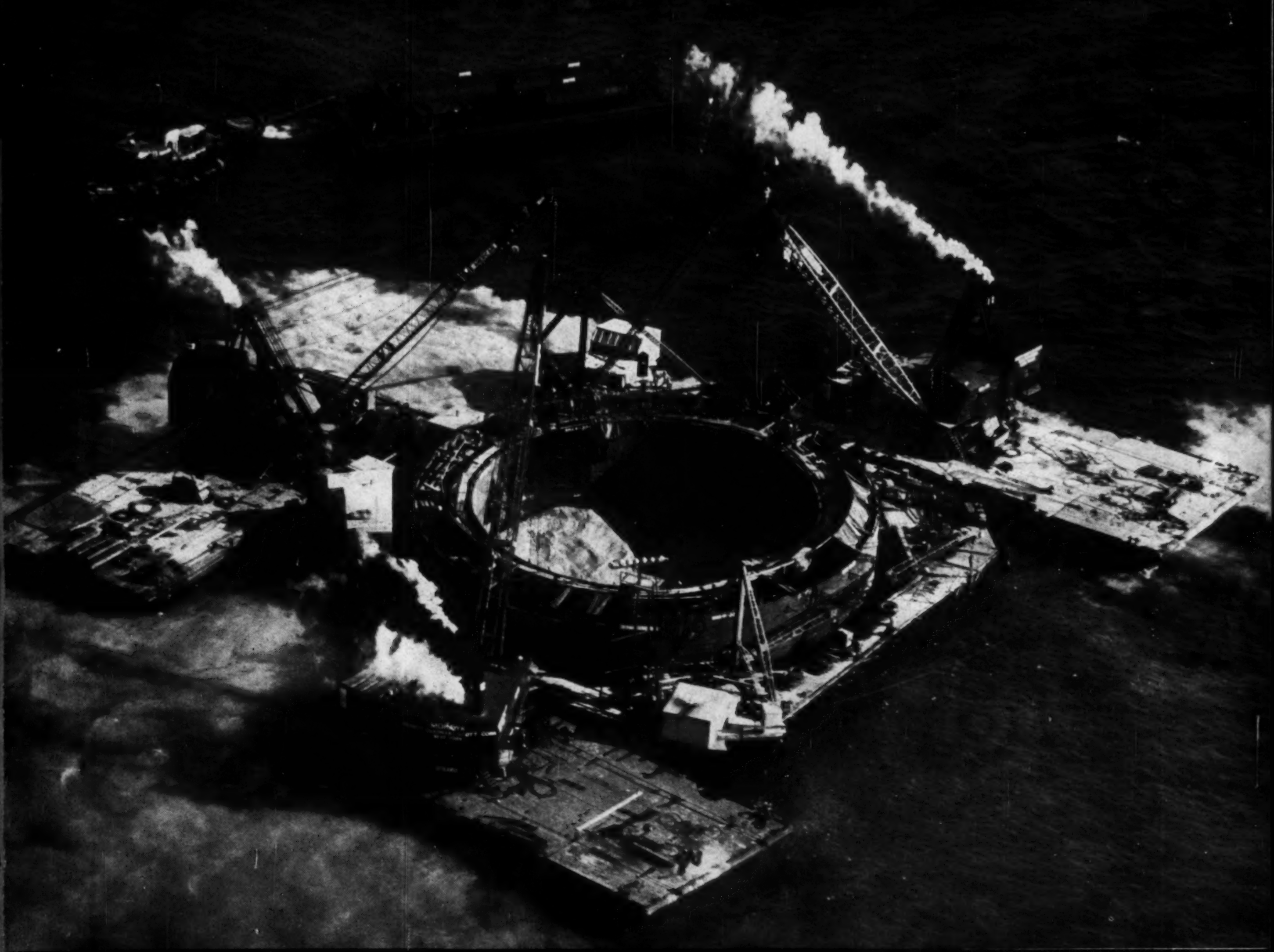
ENGINEERING NEWS-RECORD



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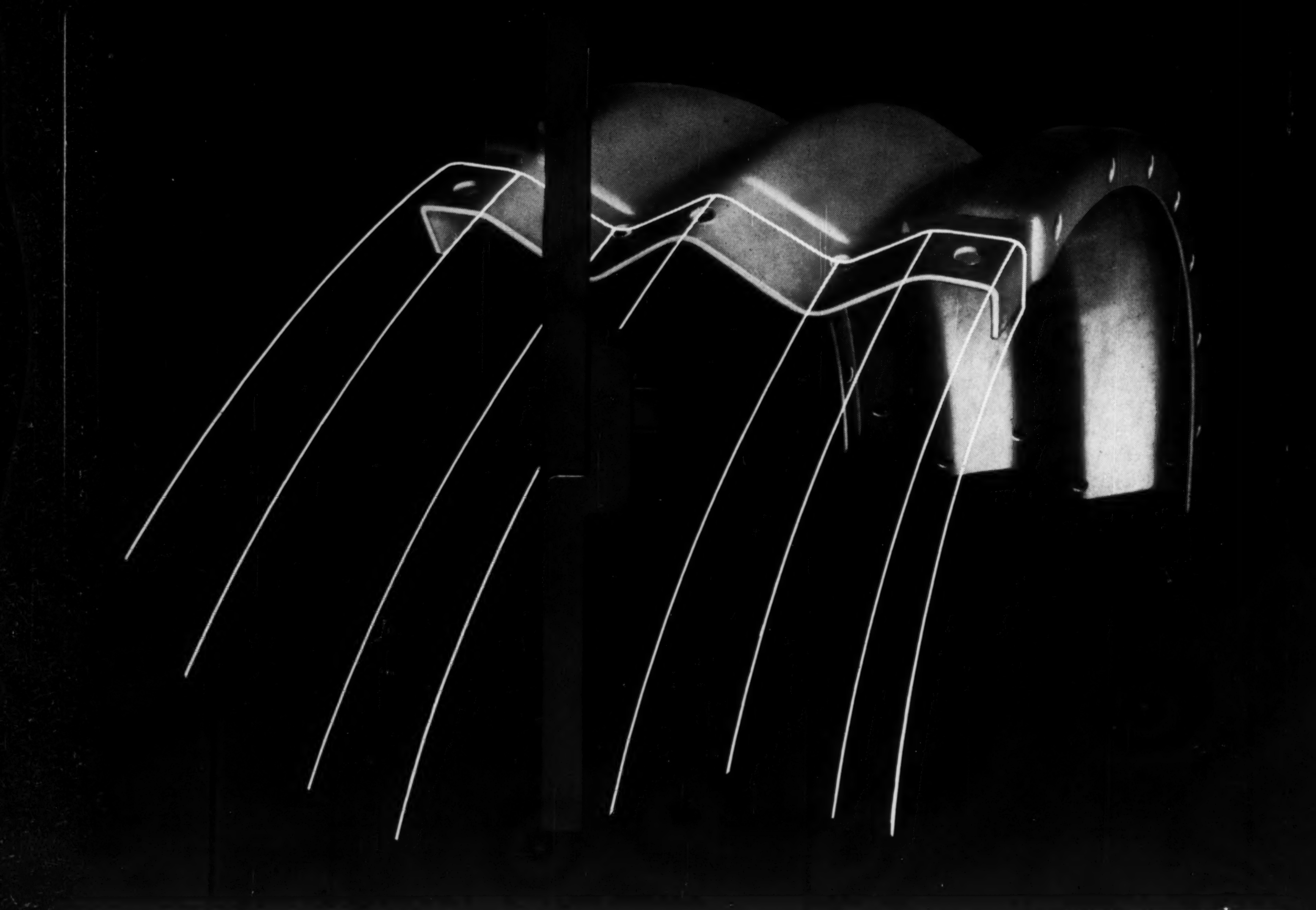

"Overlapping grip" gives tunnels more strength

When heavy timbers were used for tunneling, the process was inefficient and often hazardous. No one could tell the exact strength of even the heaviest beam.

An improvement was made with the development of metal plates. But Armco Engineers were still not satisfied. They wanted more strength with less weight for easier handling. Corrugations provided part of the answer. Then they took a cue from golf experts and designed the "overlapping grip" of today's Armco Liner Plates. This made corrugations, overlapping at each joint, continuous around the rings. On a pound-for-pound basis, it is *the strongest liner plate structure made!*

The same principle of strength-through-corrugating is used in the design of many other Armco Structures—including Standard Corrugated Metal Pipe and Pipe-Arch, MULTI-PLATE Pipe, Arch and Pipe-Arch, FLEX-BEAM Guardrail, Perforated Pipe and Steel Sheeting. These and other Armco Products are the result of 50 years of manufacturing and fabricating steel.

Armco has 49 manufacturing plants and twice that many sales offices conveniently located in the United States and Canada. Wherever you may be, there is a nearby sales office to quickly provide data; and a fabricating plant to give prompt delivery. Why not put our service to the test, and write us today about your particular drainage or construction problem.

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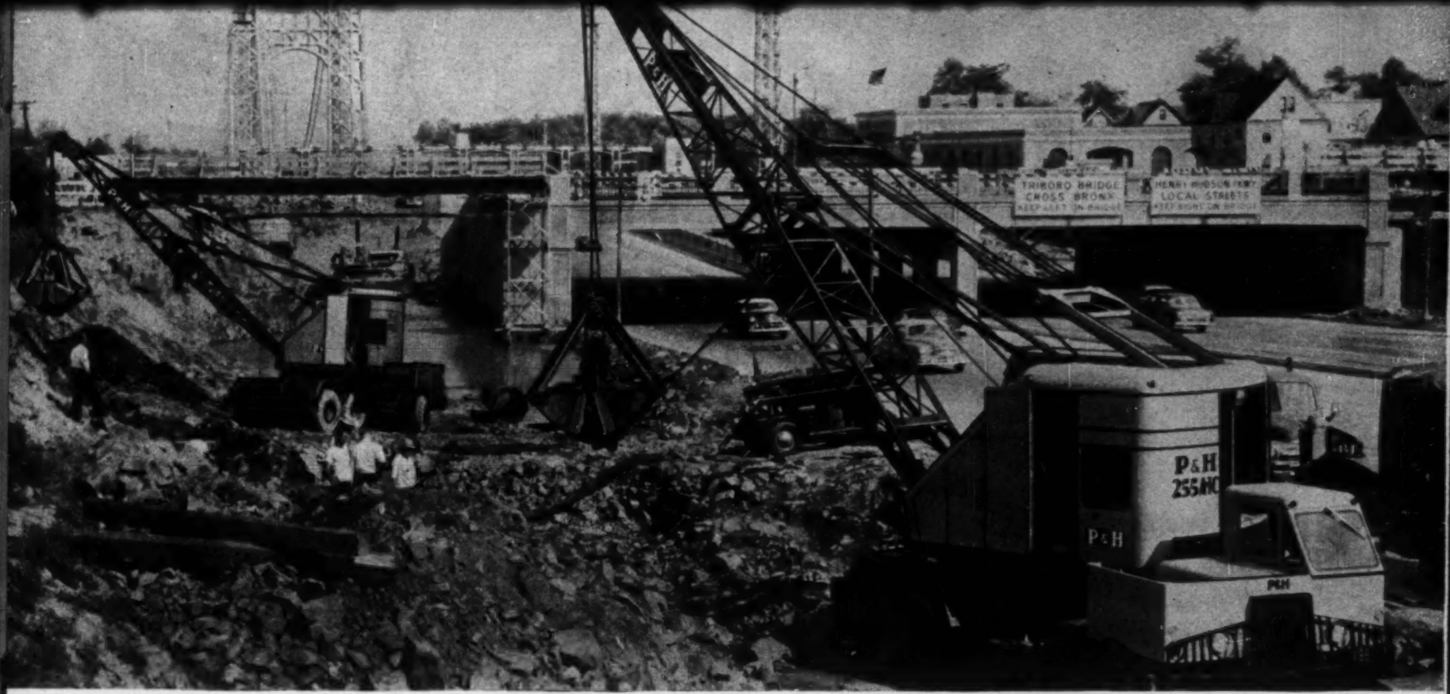
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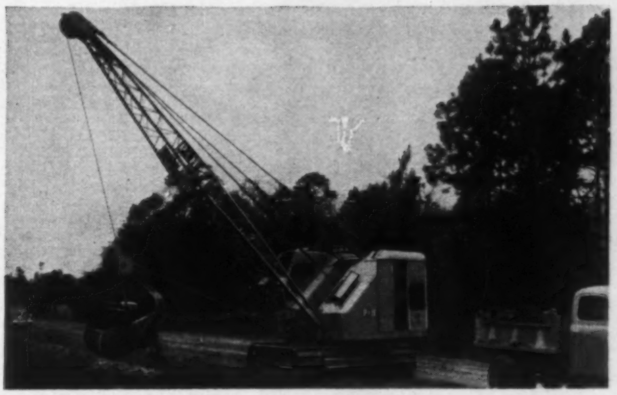
P&H Truck Cranes — two of many that gave a cost-cutting assist on the New York Thruway.

Better ideas are cutting costs

P&H 255-ATC, and a 655-B hoe team up in New Jersey.



P&H 255-A dragline cuts clean-up costs in Georgia.

P&H shows how on road jobs . . . everywhere

Looking for the newest ways to cut costs on highway jobs? Look at P&H — for here's the big selection that lets you pick *exactly* the right machine for any job. P&H Truck Cranes range from 7- to 35-ton capacity . . . crawler machines up to 3½ yds.

Every last one of them is completely modern — built around better basic ideas — not worked-over holdovers from the past. Here's all-welded construction — strength without excess weight . . . greater stability — to use full power more effectively . . . low pressure hydraulic control for faster, more responsive load handling. No wonder P&H can deliver more, every day of the week.

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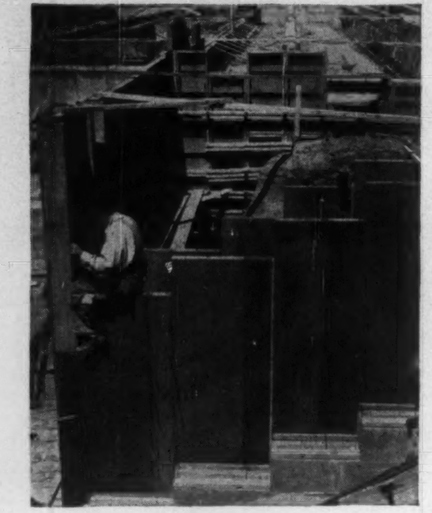

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The construction of stepped footings, ordinarily an expensive method of forming, was handled at no extra expense, on the administration building at the Sandia (N.M.) Air Force Base, by the use of Symons Forms.

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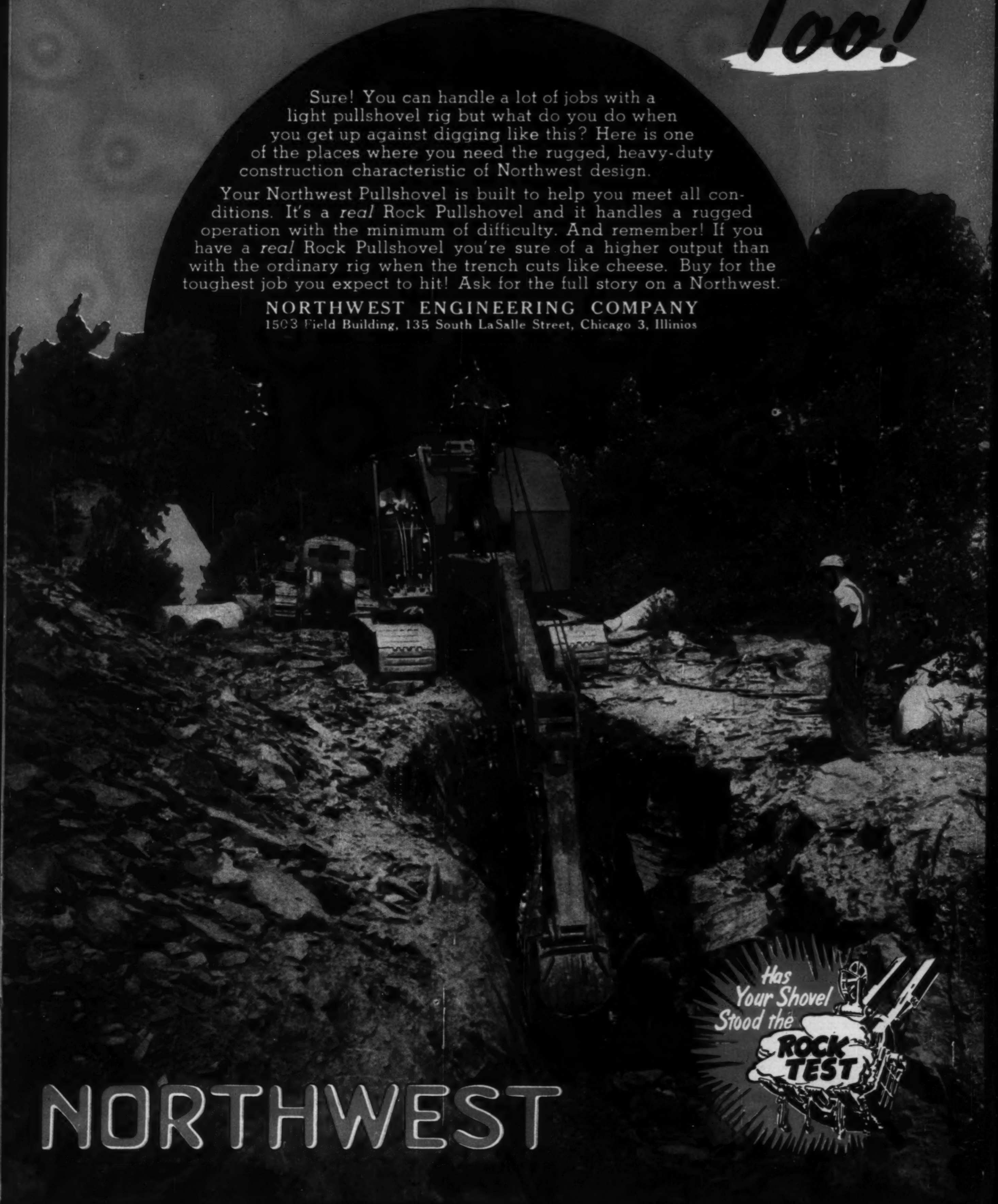

Sure! You can handle a lot of jobs with a light pullshovel rig but what do you do when you get up against digging like this? Here is one of the places where you need the rugged, heavy-duty construction characteristic of Northwest design.

Your Northwest Pullshovel is built to help you meet all conditions. It's a *real* Rock Pullshovel and it handles a rugged operation with the minimum of difficulty. And remember! If you have a *real* Rock Pullshovel you're sure of a higher output than with the ordinary rig when the trench cuts like cheese. Buy for the toughest job you expect to hit! Ask for the full story on a Northwest.

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The famous *Texaco Ursa Oil* series is a complete line of lubricating oils especially refined to make engines deliver *more power* with *less fuel* over *longer periods* between overhauls.

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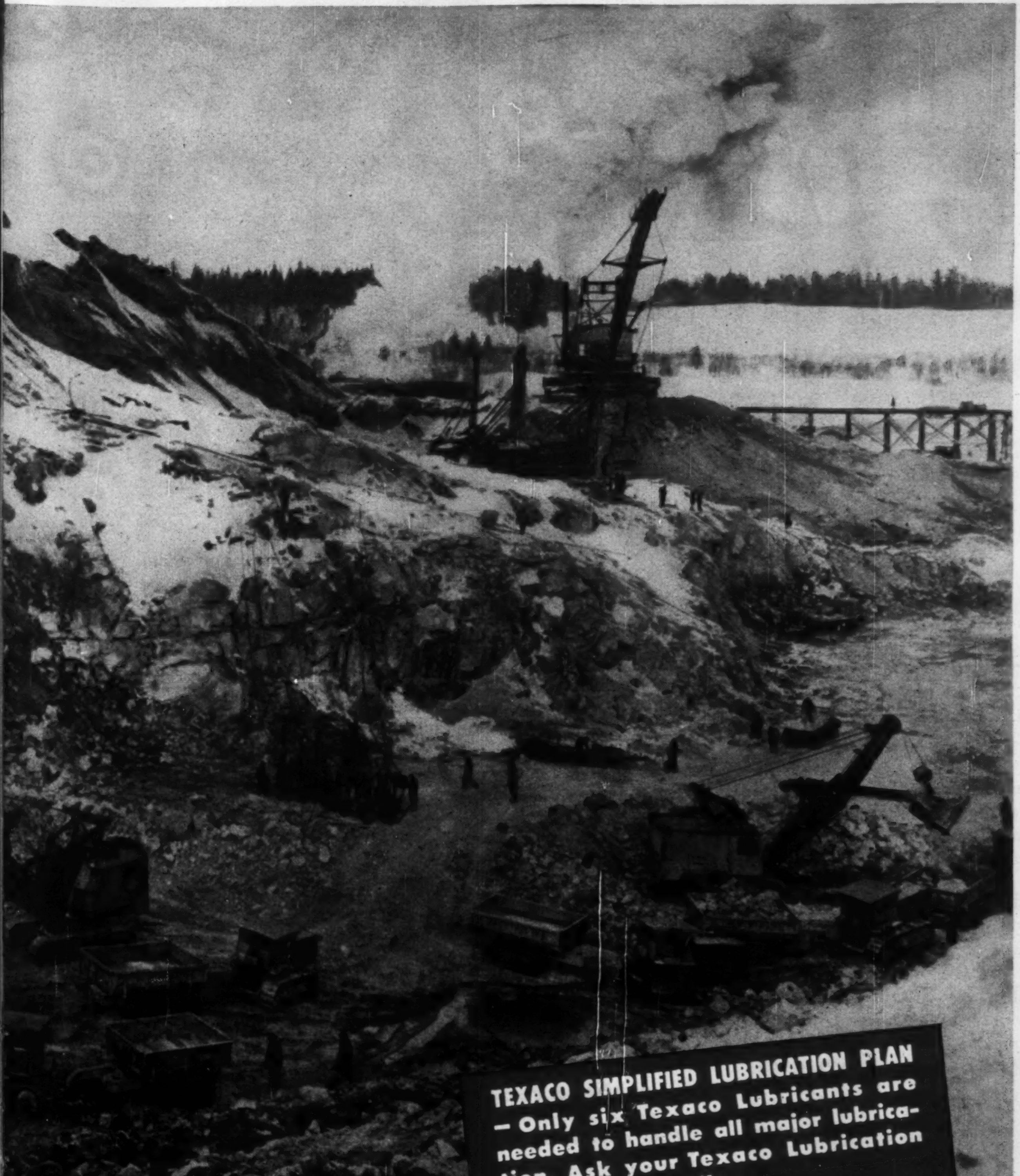
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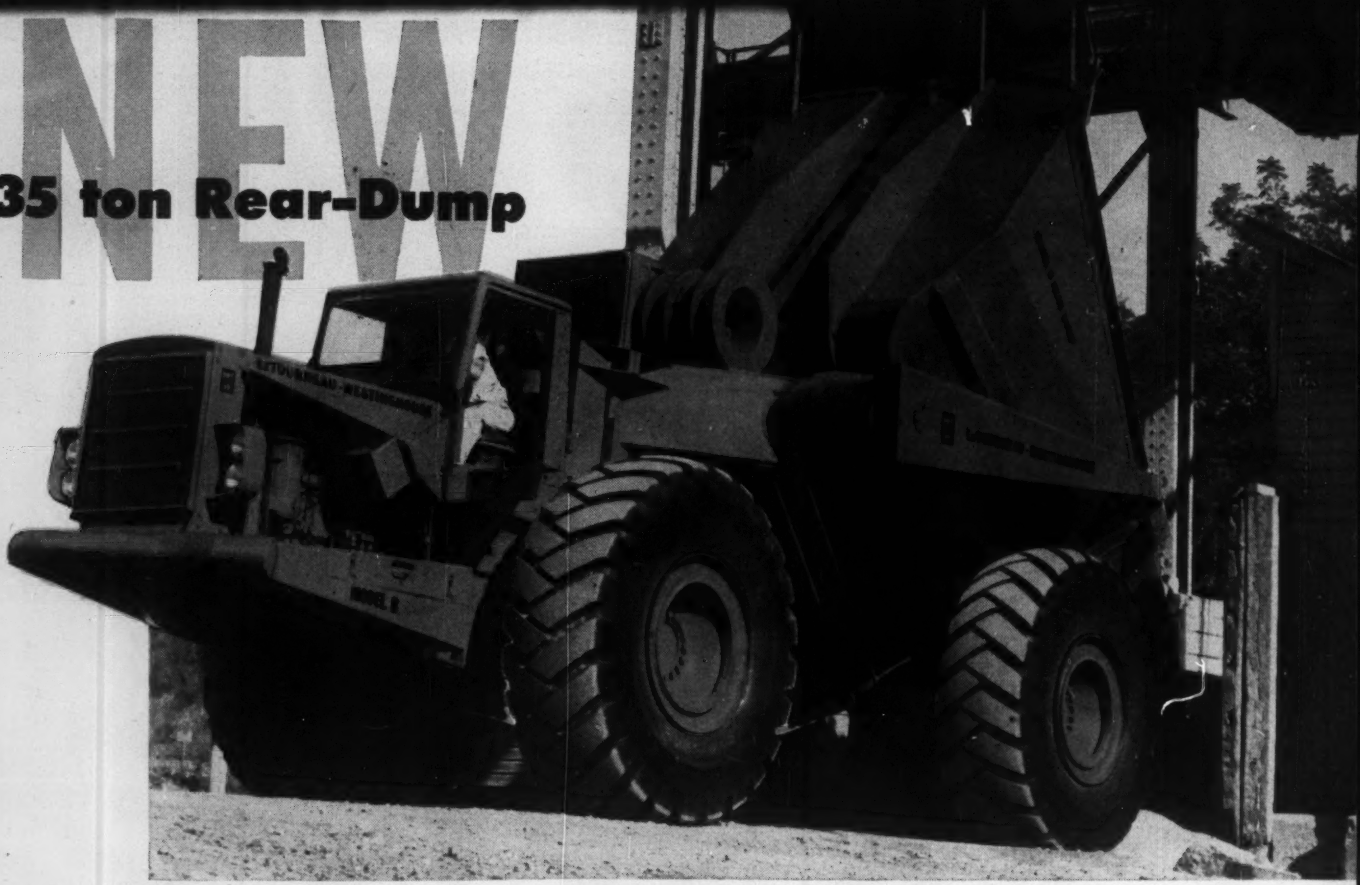
NEW

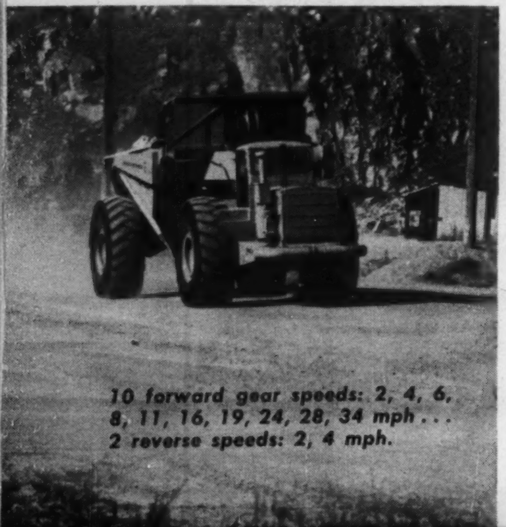
35 ton Rear-Dump



Model B Tournapull Rear-Dump is a new machine completely designed and built by the new LeTourneau-Westinghouse Company. Developed by our engineering and research staff, it was built after careful study of today's hauling unit requirements. Its design is based on eight years of experience with our revolutionary rear-dump units.

Hundreds of these earlier units are at work today . . . in mines, quarries, collieries, construction jobs . . . anywhere that material is being hauled by modern methods and modern equipment. They have been highly successful, as proved by our list of re-orders from old customers.

In the new machine, the Model B prime-mover powering the B Rear-Dump is a big powerful tractor engineered for quick and easy accessibility of all components. Every part has a "plus" safety factor to give you the most rugged hauling unit ever built. Dozens of improvements, large and small, give you a hauler that does the job better than any Rear-Dump ever produced.



10 forward gear speeds: 2, 4, 6, 8, 11, 16, 19, 24, 28, 34 mph . . . 2 reverse speeds: 2, 4 mph.

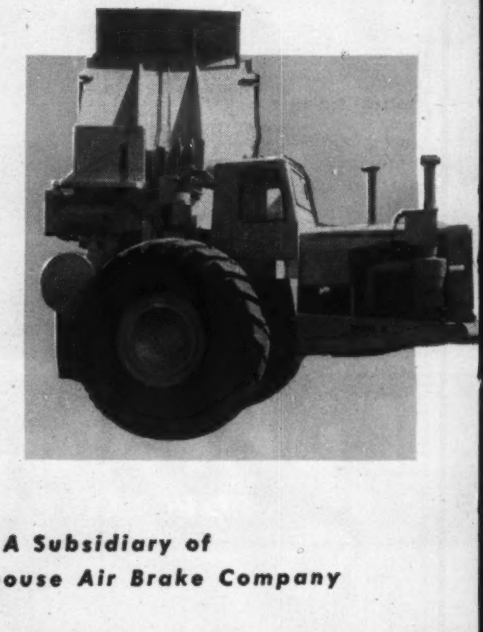
Check these features:

High speed matched to haul conditions

Tournapull B Rear-Dump has 10 forward speeds to 34 mph. Operator easily selects gear which gives him top speed. Double-clutching has been eliminated by addition of clutch brake for faster, easier shifting. Rapid shift and snappy acceleration of 300 hp diesel engine lets you move rapidly into higher gear ranges.

Improved gradability

Better distribution of weight forward onto drive wheels allows "B" to go up steeper grades than previous models could. This improvement, plus selection from 10 forward speeds, plus ample horsepower gives you a unit that can climb at reasonable speed up any grade normally found on any mine, quarry, or construction job.



LeT W

A Subsidiary of Westinghouse Air Brake Company

Non-stop U-turns in 35′

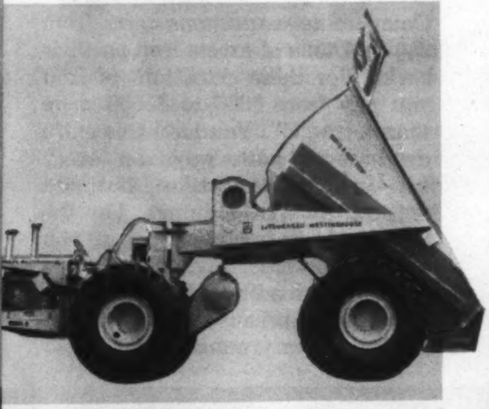
2-wheel prime-mover turns 90° right or left . . . machine in normal use makes non-stop 180° turn in space only 35′ wide. With bowl raised (which shortens wheelbase from 21′ to 12½′), "B" turns around non-stop in space only 27′ wide. This extreme maneuverability enables you to work in tight quarters where smaller conventional haulers often cannot go. You save time on any job at both shovel and dump because Tournapull can position faster . . . rarely needs to jockey back and forth like conventional haulers.

Easy loading

Big wide "target" area makes for fast loading cycles. Bowl is 17′8″ long, 10′2″ wide, has maximum depth of 7′6″. Rear of body provides wide, low entry for dipper to give extra speed advantage for the excavator. Low entry, plus wide body, reduces spillage. Rig carries 35 tons, 23 yards struck, 27 yards on 2-to-1 heap, without sideboards.

Fast dumping

Body raises to vertical position at touch of dashboard switch. Inside of body is completely streamlined. No material rides back to shovel or dragline to steal payload room on next trip. Edge of bowl swings behind and below rear wheels so rocks cannot roll forward to lodge against wheels nor can material pile under rear end.



Better flotation

Low-pressure tires more than 2 ft. wide and 7 ft. high, both front and rear, give excellent flotation. You get better traction than with other rubber-tired haulers because these broad pneumatics, with their low pressures and thick, deep lugs, have more gripping surface than duals. These features, plus power-transfer differential and power steer, take Tournapull through soft going *loaded* where other haulers with their narrow tires cannot go empty. Unit uses four 27.00 x 33's, 30 ply, as standard . . . tires *and* wheels are interchangeable between front and rear.

Rugged construction

Body is heavy steel plate, rigidly reinforced with box-beam ribs. Gussets are included for extra support at points of special stress. Slanting surfaces of scoop-shaped body take blows at an angle and tend to quickly establish a load cushion to protect the floor. Bottom consists of 2 layers of heavy steel plate separated by thick steel billets to absorb loading shocks. Floor is faced with welded-on tool-steel strips to resist wear. Main case of prime-mover is built extra strong . . . will not distort to put strain on power-train.

Simple, positive electric control

Fingertip electric control of hoist and steer gives fast, positive action. Big advantage of electricity is that motors can be placed at point of action . . . there's far less power loss than with other control systems . . . no leakage or pressure problems . . . less maintenance. Push-buttons on dashboard operate dump at touch of fingertip.

Lower maintenance

Problems of conventional rear-dumps are eliminated by simple design of B Tournapull Rear-Dump. You have no troublesome hydraulics, no long drive-shafts, no springs, spring hangers, no hinged steering-connections. Owners all over the world report exceptionally high mechanical efficiency and low maintenance.

Greater safety

Heavy-duty air brakes provide a total of 7536 sq. in. total braking surface. That's more braking surface on each wheel than most haulers have on the whole machine. Smooth and powerful, they provide safe control in any weather . . . improve maneuverability . . . give operator confidence for faster operation on steep grades, narrow, winding haul roads. Optional electro-retarder that puts an electrical resistance on generator power circuit provides additional braking action and saves wear on service brakes. Parking brake locks transmission output shaft for simple, sure braking action.

Job-proved prime-mover

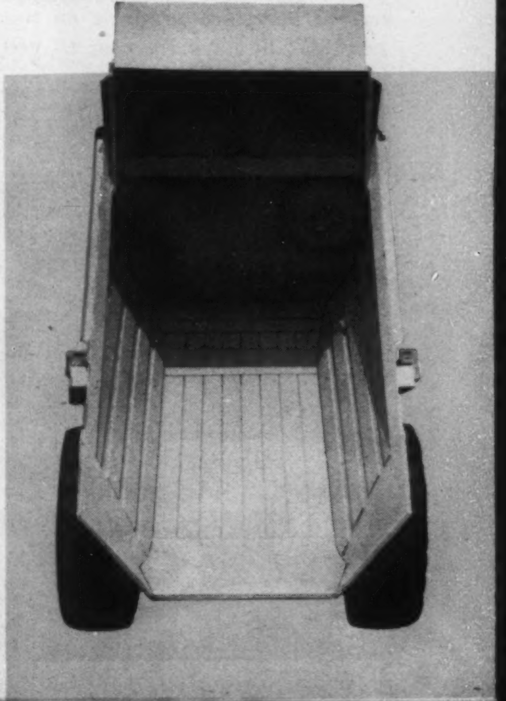
17 years' experience on thousands of installations is behind the famous Tournapull 2-wheel prime-mover. Its design gives you power steering through geared kingpin coupling prime-mover and hauling unit. You also get the exclusive Tournapull power-transfer differential which automatically transfers power from slipping drive wheel to drive wheel on firmest footing.

Profit-making interchangeability

You can interchange Rear-Dump with Scraper, Bottom-Dump, Flatbed, or Crane. Each additional trailing unit costs only about 25% of original total price. You save money because all you need buy is trailing unit body . . . rear wheels, tires, and brakes may be interchanged.

You'll want to learn more about all the advantages of the remarkable new Model B Tournapull Rear-Dump. Ask your LeTourneau-Westinghouse Distributor for all the details.

Tournapull—Trademark Reg. U.S. Pat. Off. BR-754-G



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

Now ...4 tons more capacity at no extra cost

Check these improvements:

4 tons more capacity

Payload of the C Tournapull Rear-Dump has been raised from 18 to 22 tons! Increase was made possible by redesigning the Rear-Dump body to make it lower and wider. Because of this greater width, the "C" loads faster and easier than ever before. At the same time, we have reinforced the bowl to further increase our safety margins. These improvements, plus all the others described here, are available on the new "C" at no extra cost to you.

Better gradability, stability

New body design shifts weight forward . . . improves gradability over the previous C Rear-Dump. With this improvement, "C's" grade-climbing ability now compares favorably with any make hauler on any practical haul road. Wheelbase has been increased 6 in., gauge widened to 9 ft., and ground clearance lowered to 22 in. to give you even greater stability . . . improved performance on grades. Overall length in haul position, however, is only 30 ft.

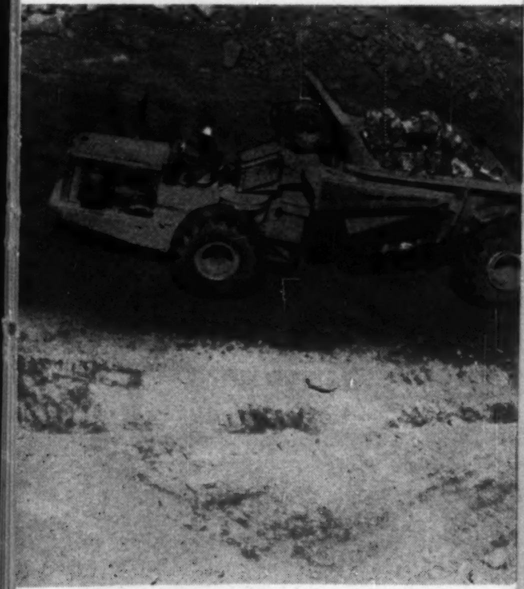
13 to 20% less deadweight

Comparable rear-dumps carry from 2½ to 4 tons of excess iron on their backs. For these extra tons of iron you pay from $850 to $5600 more than for a "C". You haul this extra dead-weight both ways on every trip your hauler makes, but add nothing to your earnings. For the life of the machine it costs you bigger fuel bills, higher tire costs due to over-loading, plus greater repair expense because of extra weight and shock on running gear.

"C" Rear-Dump now 22 tons

12% greater horsepower

To power your improved "C" Rear-Dump, you now have a 6-cylinder GM 6-71 diesel with brake horsepower rating of 208 hp at 2000 rpm. With this improved engine, you get quick pickup in starting and gear changes . . . better response at high speeds . . . better grade-climbing ability . . . all adding up to overall faster cycles. 200 hp Buda or Cummins diesels are also available. And, you have choice of sliding-gear or constant-mesh transmissions.



In addition to many improvements in structure and machinery throughout, you get all these job-proved basic features which made the previous C Rear-Dump a successful production unit:

Hauls anywhere — With big rubber tires, Rear-Dump safely travels narrow haul roads, paved highways, city streets . . . hauls cross-country over roughest terrain, through mud, and soft fills.

Reduces maintenance — Because Rear-Dump has no hydraulics, no jack lines, no long drive-shaft, no frame, sub-frame, springs or tie rods, most common troubles of conventional rear-dump haulers are eliminated.

Dumps fast, clean — A touch of a switch activates hoist motor. Body lifts quickly, swings behind rear wheels to dump clean over bank. Streamlined bowl sheds material readily.

Cuts weather delays — Power transfer differential automatically applies power to drive wheel on firmest footing . . . pulls unit through mud, sand, and soft materials which stop ordinary haulers. It's a Tournapull exclusive.

Works fast in tight quarters — 90° turns within a radius of half of unit's length, plus power steer, quickly position "big-target" body under dipper. No switching back and forth, no turntables.

Eliminates manual work — Finger-tip electric controls on instrument panel activate electric motors at point of action. Heavy manual work fighting steering and control levers is eliminated.

Resists body shock, damage — Three-layer, all-steel, grid-type bowl with tool-steel floor resists loading shocks. Big, wide bowl opening is an easy target for any loading unit.

Improves safety — Multi-disc air brakes have more breaking surface on one wheel than most haulers have on 4. Low center of gravity, good visibility, front-wheel drive, easy control also boost safety.

Delivers full power — Torque converter (optional) automatically balances load and torque so you get full hp always. Lugging is reduced; shocks between engine and transmission virtually eliminated.

Reduces fatigue — Big low-pressure tires and air-foam rubber cushion seat smooth out ride for operator. Push-buttons control every action. Fatigue factors are greatly reduced.

Insures future earnings — Behind Tournapull prime-mover, you can interchange scraper, bottom-dump, other trailing units. With them, you always keep these units profitably busy on any type of future operation.

Check for yourself. Your LeTourneau-Westinghouse Distributor will supply you with names of Tournapull Rear-Dump owners in your area. Visit the jobs . . . talk to the operators . . . learn for yourself that improved C Tournapull Rear-Dump is the answer to your hauling problem.

There is a size to fit your needs. Besides the 22-ton "C", LeTourneau-Westinghouse offers similar 9, 35, and 50-ton models.

Tournapull—Trademark Reg. U.S. Pat. Off. R-765-G

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

HICO* supports | reduced number of shores in this building by 60%

U. S. Air Force W. A. F. Dormitory, Bolling A. F. Base, Washington, D. C. Construction under supervision Corps of Engineers. Contractor: Schrieber Contracting Co., Washington, D. C. Architect-Engineer: Harley Ellington & Day, Inc., Detroit, Mich.

construction time cut 20% by new horizontal form supports

In constructing a new W. A. F. Dormitory in Washington, D. C., the Schrieber Construction Company specified 7,180 lineal feet of HICO supports. Among other advantages (listed below) they discovered that the elimination of center supports not only cut erection and stripping time but provided additional clear space for construction work on the floor below as well. This is just one of the reasons why the use of HICO supports became an important factor in speeding the completion of the job and cutting labor costs.

ADAPTABILITY
Each HICO form support is available in 2, 3, and 4 ft. sections which, when combined with end pieces, give a complete unit of varying lengths, assuring adaptability as to length of span and type of job. Variety of end pieces assures adaptability to all types of supports.

DEFLECTION COMPENSATION
Tightening of special turnbuckle device at bottom of span controls camber of span which compensates for deflection due to slab weight; assures even, level surfaces.

LIGHTNESS
Weighs 8⅓ lbs. per ft., any section easily carried.

EFFICIENCY
Engineering design assures tremendous strength and exceptionally high resistance to buckling.

STRENGTH
Carries forms and concrete on clear spans up to 27 ft.

DURABILITY
Each HICO section may be reused 100 times or more.

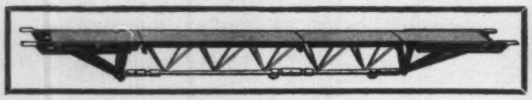
TIME SAVING
Can be erected and stripped in ⅓ the time needed for ordinary form supports. No special tools needed. HICO form supports are delivered completely assembled and tagged to show exact locations according to plans.

LOW COST
Savings in construction time naturally cut construction costs. In addition, reuse factor of HICO form supports permits amortization of initial costs over many jobs.

HICO FORM SUPPORTS may be purchased outright or leased with an option to buy. If leased, rental may be applied against purchase price. Our engineers will be happy to consult with you concerning your particular requirements. In addition they will furnish detailed layout plans showing number and type of HICO form supports required and, if desired, will work with contractor at job site to familiarize him with all phases of the product.

*Trade Mark.

U. S. Patent No. 2,687,193. Other Patents Pending.



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READER COMMENT

New York Water Supply

SIR: The article "Discussion of a Difficult Allocation Decision," (ENR Jan. 13, 1955 p. 35) requires elucidation because the authors attempt to substitute possible "need" as the controlling rule of law, completely ignoring that the rule of law governing the Delaware River—and only recently reaffirmed by the Supreme Court—is the rule of "equitable apportionment."

The doctrine of equitable apportionment of the waters of the Delaware will be applied when an over-all plan of development of the watershed above Trenton is presented by the several riparian states. Until that time the Supreme Court will retain jurisdiction over the case for the purpose of protecting the interests of *all* the states, not just Pennsylvania. New York, in 1931 and again in the recent proceeding, assumed "the risk of the future," which means nothing more nor less than assuming that the Supreme Court will continue that jurisdiction in the interest of all parties until such time as an over-all plan for the development of the Delaware is presented. From the article, one might believe that the Supreme Court would shortly curtail, or possibly put a stop to, New York diversions from the Delaware. There is no basis in fact for any such inference.

The law of the case, established by Mr. Justice Holmes in 1931, declared that the use of the river by the riparian states was governed by the doctrine of equitable apportionment. Today there are no storage developments of the river by Pennsylvania or by New Jersey. Only New York has engaged in the development of its watershed. As to the present supply of water for the needs of the states, Special Master Pantzer in his Report stated (pp. 30-31):

> "Upon one point, however, all evidence was uncontroverted—that in the course of a calendar year the Delaware River and its tributaries produce more than enough water to meet the present additional requirements of the City of New York, as well as the present requirements of the citizens of New Jersey, Pennsylvania and Delaware, if the surplus waters of winter and spring are stored for later release."

Let us now consider the future needs. The engineers for the City of New York are satisfied that the present authorized diversion of 800 mgd could never possibly exceed the city's fair and equitable share of the waters of the Delaware under the principles of law laid down by the Supreme Court. This is also the belief of engineers for other parties to the case. For example, Mr. Sherman, testifying for New Jersey in the recent case, stated (Record, p. 1320):

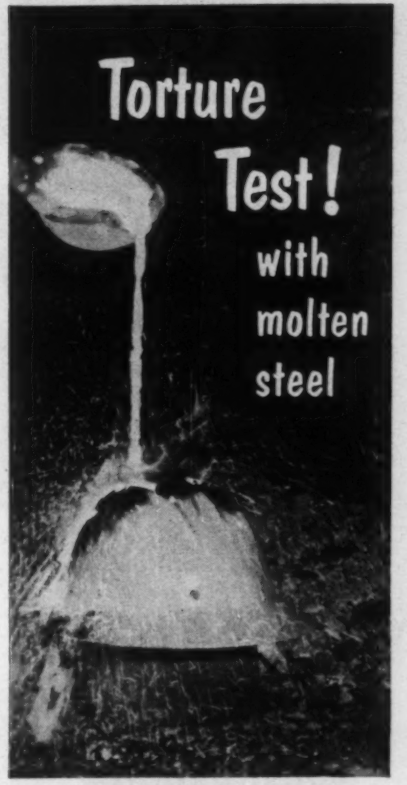
> "There is ample water in the Delaware River to supply the requirements of New York, Pennsylvania and New Jersey for the foreseeable future."

Among the principal factors in determining the equitable apportionment of the waters of the Delaware will be the size of each state's watershed and its feasible development above tidewater at Trenton. Pennsylvania not only has a larger watershed than New York, but also available reservoir sites ample for all its needs. I need only mention two developments considered by Pennsylvania's witnesses in the recent proceeding.

Mr. Charles E. Ryder, who testified for Pennsylvania in the 1931 case and also in the recent proceeding, states (Record, p. 2131):

> "My studies were accordingly predicated upon the right to intercept and use a portion of the augmented flows resulting from the New York releases, and to select a reasonable minimum rate of release for maintaining flows in the channel at Wallpack Bend and Yardley. On this basis, it was determined that Philadelphia and southeastern Pennsylvania will be able to obtain an adequate water supply at Yardley, in conjunction with a regulating reservoir at Wallpack Bend, until future requirements exceed 1,082 mgd. This supply can be augmented, if and when necessary, to 1,696 mgd. by building the Lehigh-Nescopeck project, designed to release water into the Lehigh River for more complete regulation of the Delaware River at Yardley."

Mr. Ryder thus recognizes that, under the doctrine of equitable apportionment, it becomes the obligation of each state to develop its own watershed and to participate in the regulation of the river for the use and benefit of all the riparian states. Mr. Ryder also recognizes that by the construction of two developments, Wallpack Bend and Lehigh-Nescopeck, Pennsylvania may obtain a water supply of 1,696 mgd., or more than twice the amount which New York has been given. While Mr. Greeley estimates that Pennsylvania and



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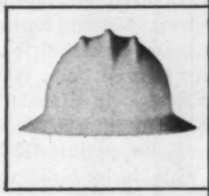

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Southern New Jersey will need 1,213 mgd in the year 1993, Mr. Ryder believes that the supply of 1,696 mgd, easily secured by the construction of only two developments, will meet the future needs of Pennsylvania and Southern New Jersey up to at least the year 2025. This belief is concurred in by the engineers of the New York City Board of Water Supply and the engineering consultants of New Jersey. Thus, New York City is fully warranted in proceeding with the Cannonsville development, and the "risk of the future" is no risk at all.

Another factor will be the proportionate use of the total runoff by states. Under the New York plan of development, approximately 10% of the total runoff of the Delaware watershed above Trenton will be diverted for the present water supply needs of more than 8,000,000 persons or approximately 1/20 of the population of the entire Nation. These figures contrast with an estimated population of the Metropolitan Philadelphia Area in 1960 of approximately 5,000,000 persons. In making use of 10% of the runoff for its water supply, the City of New York has established a valuable precedent for the regulation of the river in the interest of all the riparian states. In the original case, Mr. Justice Holmes stated:

> "A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those that have power over it."

When the time comes for applying the doctrine of "equitable apportionment" to the use of the Delaware, an over-all plan of development must be presented by the several states. One thing is certain—no state will be allowed to waste this great natural resource. Each state, including Pennsylvania and New Jersey, will be required to develop its respective watershed and devote a portion of its storage to river regulation, just as New York has done.

Hence, when the authors referred to Mr. Greeley's testimony that "injury, with storage limited to Neversink, Pepacton and Cannonsville Reservoirs, would start in 1978," they not only ignored the facts in the record but also ignored the equitable requirement that Pennsylyvania must avoid waste and create its own storage reservoirs so as to draw on the drainage area within its own boundaries before it will be heard to claim that the New York City diversions are causing it irreparable injury. Moreover, the record of the case clearly shows that under the decree Pennsylvania will always be benefited and never injured by the operation of the New York developments.

Meanwhile, the Supreme Court retains jurisdiction of the case, and we may rest assured that, upon all applications for amendments to the existing decree, that Court will secure the public interest of *all* of the riparian states in the use of the river by any one of them. It is equally certain that the precedent established by the City of New York for devoting a portion of its reservoir capacity to river regulation in the interest of the riparian states will be followed in respect to future developments of the watershed above Trenton by Pennsylvania and New Jersey.

In any short commentary on the Delaware River Case, there is danger of oversimplification. My chief concern is to dispel any impression that New York City engineers would be recommending the large expenditure for Cannonsville if they did not have substantial historical and scientific basis for their judgment that the proposed diversion of 800 mgd can be made without ever causing injury to the other riparian states.

John P. McGrath
Special Counsel, New York City
Board of Water Supply.

How to Improve Terminals

Sir: We have been very interested in airport development and found your article on airport terminal buildings (ENR Nov. 18, p. 34) most stimulating.

In the exhaustive study of traffic flow from vehicles to planes, it seems that an important conflict has been overlooked; that is, the basic conflict between vehicles and planes at the same level. Virtually all the terminals extant depend on maintenance of vehicles and planes at the same level. This results in the use of roughly only half the ground area for loading of planes. If the vehicles could be brought in at a lower level, below grade, as in Grand Central Station, New York City, the entire grade level could be devoted to plane loading and servicing. Similarly, local deliveries by helicopter could be brought in at roof level without interference with planes.

With such a segregation of traffic, the terminal could then take a circular or elongated rectangular shape, with the advantage of passenger circulation from a central core to extensions on all sides. Although vehicular parking, if maintained above grade, would be somewhat more re-

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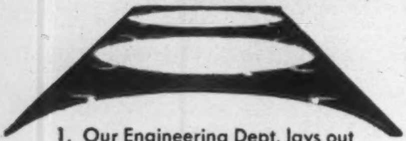

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moved from the terminal, it would not, of necessity, be much more remote than is now maintained at many airports.

So you would either halve the distance of pedestrian travel from terminal to plane, or double the accommodations for planes.

A further step toward freeing the surface for plane service would be the introduction of subterranean service tunnels, which would provide satellite service centers on the field. Such construction also would eliminate the necessity for crossing the field to planes in bad weather.

While these suggestions might alleviate some of the travelers' discomforts at the field, the basic problem of efficient transportation of passengers from the urban centers to airports remains. As an air traveler, I have found that most irksome and time-consuming. Possibly, the answer to that lies in the helicopter, which, if landing atop the airport and originating from atop downtown buildings, could reduce the trip to the airport considerably.

Keep up the good work—there's much to be done.

ALFRED HOMER SWANKE
Office of Alfred Easton Poor, Architects
New York, N. Y.

Terminal Design Problems

SIR: We read your article, "What's New In Airport Terminal Buildings?" (ENR Nov. 18, 1954, p. 34) with considerable interest. You have covered the various problems of passenger handling, baggage handling, sightseeing, vehicular and aircraft parking from the standpoint of terminals of various sizes.

The "number one" complaint today at most terminals is the baggage-handling delay. Some of the solutions and suggestions offered in your article are promising. It should be noted that there are as many ideas as there are terminals, and part of the trouble lies in non-standard procedures from airport to airport. What is needed is the fastest system of handling from counter to aircraft, and from aircraft to baggage room, and from baggage room to passenger. When operators meet to solve this problem, it will be a great step ahead.

We deplore terminals that are erected as city monuments without studying the airport surface capacity to handle large volumes of aircraft. Likewise, a busy airport with inadequate gate positions can create frustrating problems.

What we note in many of the new terminals is a failure to take into account all of the variables and allotting proper emphasis to each. A terminal with adequate restaurants and sightseeing decks is a waste of money if there is insufficient parking space provided for the sightseers, etc.

It seems to us that in the planning of a suitable terminal account must be taken of air-traffic problems in the air and on the ground, as well as baggage handling, minimum walking distances, rest and eating facilities, personnel housing and working areas, sightseeing, parking and limousine space, passenger and baggage interchange with other airlines, etc. Just one of these items out of phase can disrupt the harmony and efficiency of the whole. Let us hope our planners of the future plan well.

MILTON W. ARNOLD
V.P.—Operations and Engineering
Air Transport Association of America
Washington, D. C.

CALENDAR

Mason Contractors Association of America, annual convention, Jefferson Hotel, St. Louis, Jan. 30-Feb. 2.

Seventh California Street & Highway Conference, Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., Feb. 2-4.

Association of Asphalt Paving Technologists, annual meeting, Jung Hotel, New Orleans, La., Feb. 7-9.

American Society of Civil Engineers; convention. U. S. Grant Hotel, San Diego, Calif., Feb. 7-12.

National Society of Professional Engineers, spring meeting, Hotel Charlotte, Charlotte, N. C., Feb. 18-19.

American Concrete Institute, annual convention, Hotel Schroeder, Milwaukee, Wis., Feb. 21-24.

Annual Highway Engineering Conference of the University of Colorado, Boulder, Feb. 24-25.

Concrete Contractor's Association of Greater Chicago, Mid-West Concrete Exposition, Navy Pier, Chicago, Feb. 24-26.

Association of Highway Officials of the North Atlantic States, annual convention, Hotel Traymore, Atlantic City, N. J., March 2-4.

American Society of Photogrammetry and American Congress on Surveying and Mapping, consecutive meetings, Shoreham Hotel, Washington, D. C., March 6-12.

National Association of Corrosion Engineers, annual conference, Palmer House, Chicago, March 7-11.

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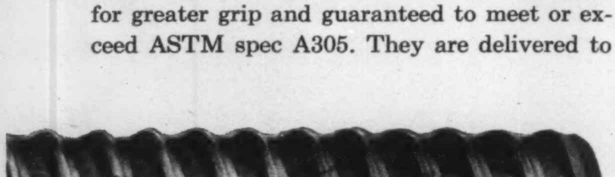

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THE CONSTRUCTION WEEK

GOLD SKYSCRAPERS—Two big architectural firms have independently conceived the idea of enclosing two New York City skyscrapers they are designing in a gold-colored material. Asking for at least 30-year guarantee on the color, they are presently investigating the possibilities of porcelain-enameled metals and yellow metals and alloys. Special-finish brass appears to have a good chance.

OUT-OF-STATE COMPETITION—Legislation to protect contractors from out-of-state competition has been proposed in one state and is under sharp attack in another. The legislature in Colorado—where 15% of last year's road funds were paid to out-of-state contractors—has received a bill that would require bidders on state highway and public building projects to be Colorado taxpayers. The out-of-staters would have to maintain an office in the state, incorporate under its laws or otherwise make themselves taxable.

Meanwhile, the Justice Department is considering action to test constitutionality of an Arkansas statute that requires out-of-state contractors to obtain a license as a condition to working in the state. Federal interest in the matter arises from the fact that four contractors on federal jobs in Arkansas are fighting the law.

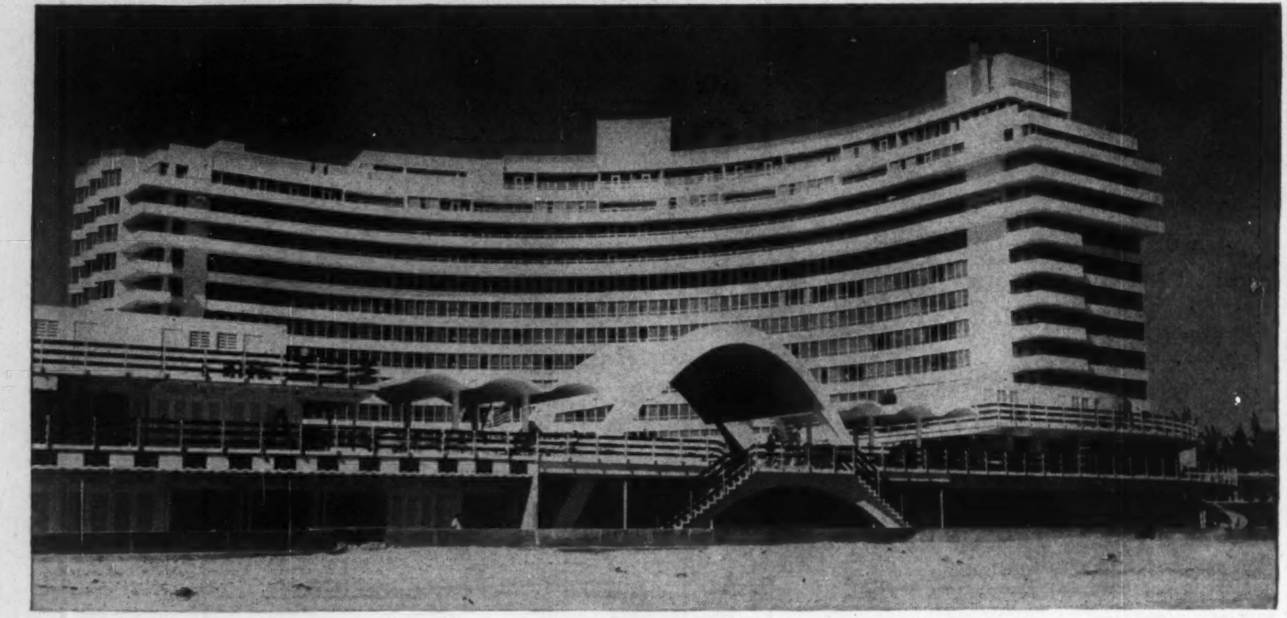
NO USE GOING ON—With all states now having laws governing the licensing of professional engineers, Carnegie Institute of Technology has decided to discontinue its degree of professional engineering after commencement, 1957. Only 133 graduates since 1916 and only four since 1946 have taken the degree, awarded for a minimum of four years' professional experience plus a thesis based on an engineering problem with which the candidate was concerned.

CHARITY BEGINS AT HOME—So far as the Arizona legislature is concerned there just can't be any argument about it—"This Ole House" (and senate, too) need a fixin'. On the opening day of the current session—which is to consider a new capital building—the rain dripped through the roof of both chambers.

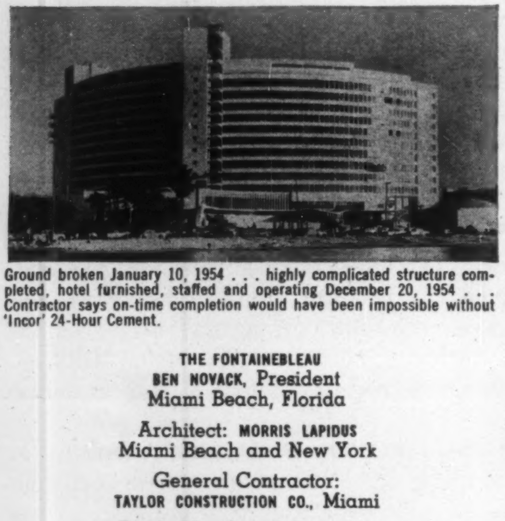
STRETCHING ROAD DOLLARS—Although instances of highly competitive bidding have been commonplace for well over a year, Wisconsin's experience with roadbuilding contracts in 1954 notable. Low bids averaged 18% under commission estimates.

NAMES TO REMEMBER—The Ohio Turnpike Commission has gone to great pains in naming 16 service plazas being built along the remaining 219 mi of its 241-mi turnpike project. Seeking designations that would be easy to remember and yet symbolic of the state's history and geography, it consulted museums, libraries and historical societies. Among the selections: "Towpath," "Brady's Leap," "Fallen Timbers."

the fabulous Fontainebleau



Miami Beach's Magnificent New Hotel, Luxurious Place in the Sun, Concreted with 'Incor' for Economical Speed



Ground broken January 10, 1954 . . . highly complicated structure completed, hotel furnished, staffed and operating December 20, 1954 . . . Contractor says on-time completion would have been impossible without 'Incor' 24-Hour Cement.

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● Magnificent new $14-million Fontainebleau Hotel, on the old Firestone ocean-front estate, 44th to 48th Streets, Miami Beach, opened its hospitable doors precisely on schedule last December.

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With concaved façade fronting on 950 ft. of private beach, the new 14-story hotel, air-conditioned throughout, has 565 bedrooms and suites, 263 cabanas, and private yacht anchorage.

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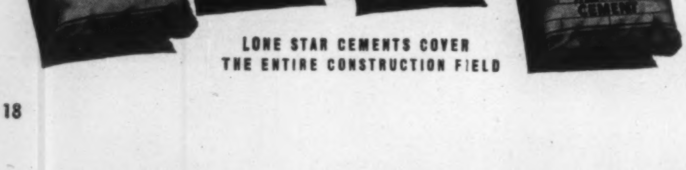
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WASHINGTON OBSERVER

Democrats are trying to get the political jump on school construction. Senators and representatives have worked out differences in what the program should contain, and have agreed that a religious fight will not develop to hamper some action this session. Rep. Graham Barden of North Carolina, chairman of the House Education Committee, balked on aid to education measures some years ago on the parochial school issue, but is satisfied a construction program can be worked out this time.

Senate chairman Lister Hill will start his Labor and Welfare Committee working in advance of Eisenhower's Feb. 15 message on schools. All in all, the program is taking on the dimensions of the highway program, if not in money, then in concept.

•

Local interests will have to come up with their end of things if the partnership policy on public works is to work. This is the point Eisenhower and his economic advisers make in their annual message on the state of the economy (see page 21).

Eisenhower spelled this out specifically in his press conference last week when asked about his failure to have in his budget any funds for deepening the Delaware River to U.S. Steel's Morristown plant.

The locality should be made to participate the President told reporters, when the federal government spends money that is mainly in the interests of the locality. The President said he wouldn't specify the means by which this partnership could be worked out. But he did mention tolls on vessels using the channel, as a possible alternative to having the industry itself pay a share of the money needed to deepen the channel..

Army Engineers last year recommended U. S. Steel pay half the cost of deepening the channel from 35 to 40 feet. This would cost U. S. Steel—or whoever would pay—$18 million of the project's total estimated cost of $91 million.

Congress authorized the federal government to pay the whole thing. Even with no money in Eisenhower's budget, Congress may step in this year and vote the money for the Army Engineers to do the whole job.

•

Report on cost of relocating all utility transmission lines involved in the government's new highway program is due next week from the Bureau of Public Roads. Survey of utilities was made a couple months ago, and results are being tabulated at the Bureau of Public Roads. There will be millions involved.

Utilities want this to be part of the cost of building the highway. But to date—including the Highway Act of 1954—Congress has been willing only to study the matter.

•

Talk of 1.5-million to 1.7-million housing starts this year has touched off some concern among the Administration's watchdogs of the money markets. They want very much to see housing continue at its present rate of 1.3-million or so. But there's fear that an additional 400,000 starts this year, might mean price inflation, which they don't want (see page 123). This is one reason behind the Treasury's considering a long-term bond issue.

•

FHA is giving rental housing a close look to see whether insurance on apartment mortgages is being given out too generously. Reason is that a spot check of its field offices shows that, since the 1954 act, more and more families leaving apartments are buying single-family homes.

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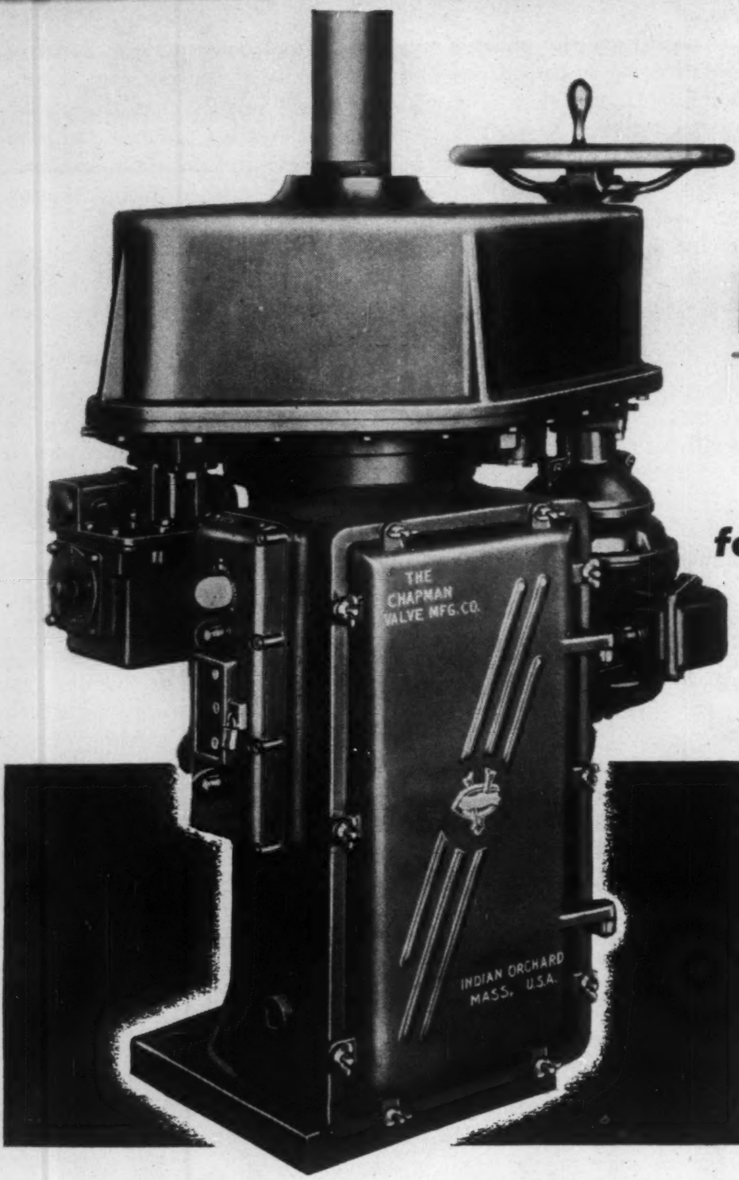

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In This Congress:

Construction Will Get a Friendly Reception

Construction legislation will get friendly and generous treatment by the committees handling public works and federal construction in this Congress.

A rundown of committee chairmen who will handle authorizing legislation for the $5-billion package of public works proposed by President Eisenhower (ENR Jan. 20, p. 21) reveals all of them to be on the friendly side. Several of them can be counted on to add a few projects of their own to those proposed by the President.

Floor action isn't as easy to anticipate, but it is obvious that the climate is favorable for a high level of construction spending.

There will be individual economy advocates, such as Sen. Harry Byrd of Virginia, who will try to harpoon federal spending projects. But it looks like they will be a small minority.

The only area of sharp conflict will be in public electric power where the Administration has substituted the partnership approach for big federal development of power sites. Even here the controversy will be less sharp this session because of the willingness of the Administration to go along on such big federal projects as the billion-dollar Upper Colorado storage and the Frying Pan-Arkansas projects.

• Recommendations to Congress—In his annual economic report the President asked Congress to authorize a Coordinator of Public Works Planning. He said coordination of federal, state and local public works programming was needed to assure the continued growth and stability of the national economy.

He also urged Congress to appropriate more money to stimulate public works planning by state and local governments. The Housing Act of 1954 gave the Community Facilities Administration of the Housing and Home Finance Agency $1.5 million out of an authorization of $10 million to advance local government agencies for planning.

About 300 cities, counties and local public bodies have inquired about getting these federal planning funds, and 215 are preparing qualification statements, first step in the process.

The President said the funds available for planning advances should be substantially enlarged and recommended creation of a revolving fund for this purpose. He stressed the need to create a reservoir of public works projects, planned and ready to go under construction in case of need.

One of the novel ideas in the message was a proposal that Congress change the tax laws to allow an investment company handling tax-exempt securities to pass the tax exemption along to investors. His idea here is to broaden the market for small and little-known municipalities through the establishment of private investment trusts specializing in their securities.

• Construction outlook in committees—Military construction will get a friendly reception before both authorizing and appropriating committees. The amount of new authorizations sought for the Army, Navy and Air Force will run to $1.4 billion. Appropriation requests will approximate $1.9 billion.

Both Armed Services Committees have a history of generous treatment of the services. Sen. Richard Russell of Georgia, chairman of the Senate committee, has been critical of the cutback in funds for the Army. His approach towards military construction money is more likely to be "is it enough?" rather than, "is it too much?"

Housing will come before the Banking Committees. Chairman Brent Spence of Kentucky in the House is in favor of the proposed 70,000 public housing starts over the next two years and says if it were left to him he would up the figure to 140,000. The Senate committee, under Sen. J. Fulbright of Arkansas, will be equally friendly.

School construction will go through the Labor Committees where a race is expected to see which committee can report a school construction bill first. Sen. Lister Hill of Alabama, chairman of the Senate committee, has introduced a bill of his own calling for substantial federal aid for school construction. On the House side, Rep. Graham Barden of North Carolina is more conservative, but he, too, is expected to back federal aid for school construction.

Public Works Committees will handle the President's highway proposals in which he calls for a stepped up construction program financed by issuing bonds, rather than by federal appropriations.

There is a reluctance among many congressmen to let highway construction get out from under the congressional thumb, and some Democrats will oppose the plan as avoiding fiscal responsibility by circumventing the budget.

These committees, however, are sure to favor a stepped up highway program and will approve the proposal, even though they may modify the method of financing. Both House chairman Charles Bulkley of New York and Senate chairman Dennis Chavez of New Mexico have a long history of strong support for federal aid to highways.

Big reclamation and power projects will get the plush carpet treatment before the Interior Committees. Democrats on these committees are apt to push the President farther than he would like to go in this area.

Chairmen James E. Murray in the Senate and Clair Engle in the House will take a dim view of the President's partnership approach to power construction. Instead, they will push for big federal grants for construction of such projects as Trinity River and San Luis power and irrigation in California, Upper Colorado and Frying Pan-Arkansas in Colorado. They may tackle the controversial Hell's Canyon project on the Snake River in Idaho.

• Authorizations aren't appropriations—The big rub is how much money Congress will vote to launch the projects it authorizes. This week the House Appropriations Committee was in a snarl over how it would handle public works money.

Chairman Clarence Cannon has completely revamped his subcommittee lineup, creating a new public works subcommittee and taking away from established subcommittees many of the agencies over which they exerted jurisdiction.

Rep. Cannon, himself, would be chairman of the Public Works Sub-

. . . Congress

committee. With this personal control of appropriations for such a wide range of projects, Rep. Cannon would have a dominating influence in deciding which projects may be started and which will be pigeonholed.

Rep. Albert Thomas of Texas, chairman of the once-powerful Independent Offices Subcommittee, is seeking to force a meeting of the full committee at which an attempt could be made to rescind the action. Funds for TVA, Atomic Energy Commission, and regional power administrations were stripped from Thomas's subcommittee and placed in the new subcommittee to be headed by Cannon. Funds for Army Engineers and reclamation are also included in the new subcommittee.

Rep. John Taber, ranking Republican, early this week still had not named the minority subcommittee members and had joined Thomas in seeking a meeting to upset the action. "I consider it a step backward, not a step forward," said Taber.

But whether the action could be upset remained in doubt. The crusty chairman from Missouri is a parliamentary expert and doubtless will rely on his parliamentary skill to avoid a showdown.

Full-Scale Model Will Test Ideas for Office Building

Connecticut General Life Insurance Co. is going to get a chance to try out its new home office building in Bloomfield, Conn., before it is actually built. The company is erecting a 60x72-ft mockup—a typical portion of the main clerical area.

This area, which will be on the second floor of the finished structure, will contain four interior garden quadrangles. The mockup will represent part of the space between the glass exterior wall and the opposite glass wall overlooking one of the quadrangles. The new building will not be completed until 1956.

The mockup will be used primarily for testing lighting, acoustics and materials. It will enable the builders to field-test assembly of full-size exterior walls and to plan in advance for integration of interior structural and service elements such as beams, ducts and lighting fixtures.

The new building will consist of a three-story clerical wing, four-story administrative wing and one-story, 800-seat dining area. It will provide 500,000 sq ft of office area. Skidmore, Owings & Merrill is the architect. Turner Construction Co. is the general contractor.

The Blast That Holed Through Tecolote . . .

. . . Set Off Well-Deserved Victory Smiles

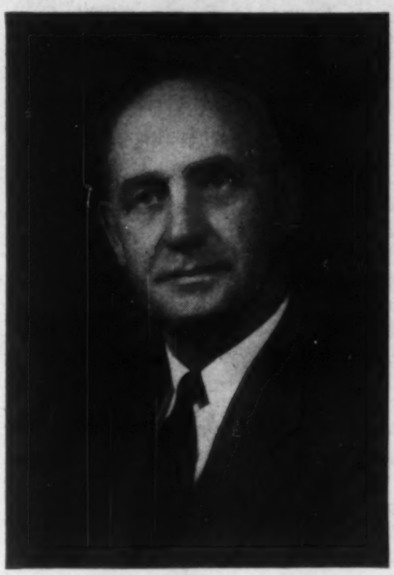
Holing through the $8-million Tecolote Tunnel near Santa Barbara, Calif. (ENR Jan. 20, p. 26) completed excavation of one of the most difficult tunneling jobs of modern times.

Groundwater at 116 F forced a shutdown in mid-1953, short of the breakthrough by 4,716 ft. Work was resumed last April under a new contract. And, the difficulty doubled the tunnel's cost. The final blast (top photo) took place near the midpoint of the 6.4-mi bore. Tunnel lining is underway, with completion expected at the end of this year. Although the tunnel's notorious hot water problems have been solved for the most part, the contractors will still have some difficulty sealing off water inflow.

Contractor and Bureau of Reclamation officials who are seen sitting triumphantly on the final muck pile (lower photo) include (l. to r.): A. M. Coker, Coker Construction Co.; Walter Scott, Peter Kiewit Sons Co.; E. R. Crocker, USBR project manager; and L. N. McClellan, USBR chief engineer.

CCA Adopts Industry Code

Canadian contractors vote code of good practice as step to better relations between specialty, general contractors



W. G. MALCOLM is new president of Canadian Construction Association.

The Canadian Construction Assn. unanimously adopted a "Code of Good Practice for the Construction Industry of Canada" at its 37th annual meeting in Quebec City last week.

The code—generally called the "Ten Construction Commandments"—was recognized at the meeting as only the first step toward clearing up difficulties in contractor relations within the industry. Bid peddling and shopping are considered the most serious of these difficulties.

The code was drawn up by a committee composed of four general contractors, four specialty contractors and an independent chairman, Robert F. Leggett, director of the Division of Building Research of the National Research Council. The committee has worked for a year to produce the unanimous report which the CCA accepted.

The report pointed out that the unique organization of the CCA made it possible for the organization to deal with the problem of contractor relations. The CCA represents all parts of the Canadian construction industry. It is divided into four sections—general contractors, specialty contractors, roadbuilders and material and supply.

• **Bid peddling**—A number of suggestions for eliminating bid peddling and shopping were discussed. One was that specialty contractors submit bids to architects directly. The bids would be used later with an acceptable general contractor.

Another was the use of a bid depository system like that now in operation on an experimental basis in the Vancouver area. A third was the submission of specialty bids to different types of trustees.

A system in use by at least one architect in western Canada also was described. Under this system, specialty contractors submit sealed copies of their bids to the architect's office at the same time the bids are submitted to general contractors and at a stated time before the bids from general contractors are received.

When the low general contractor's bid is selected, the figures it includes for specialty contracts can be compared with the figures submitted to the architect in the copies of the specialty contractor's bids.

• **Just a Start**—These local practices are so varied, however, that the CCA decided the only practical start in point was the establishment of a set of "rules of the game" for the competitive business of construction.

The code will be used as a basis for discussion with national organizations of architects and engineers and with local groups in an effort to correct bidding practices that are found to be unsatisfactory.

It will have a special application in Toronto where the National Association of Master Plumbing and Heating Contractors of Canada, backed by the Ontario Electrical Contractors Assn., has refused to submit bids to general contractors because of alleged bid peddling.

Two specialty groups accepted the code before it was approved at the CCA Quebec meeting with the understanding that it was to be used as the basis for immediate further discussions at the local and national level.

The CCA meeting this year was the largest in the organization's history with more than 1,000 delegates attending. W. G. Malcolm, president of Malcolm Construction Co., Ltd., Winnipeg, was elected president for 1955, replacing Ray Brunet of Hull, Quebec. A. Turner Bone, president of J. L. E. Price and Co., Montreal, and Tullis A. Carter, president of the Carter Construction Co., Toronto, were elected national vice presidents.

• **Defense construction**—R. G. Johnson, CCA's general manager, made his fifth report in his temporary position as president of Defense Construction, 1951, Ltd., Canada's Crown company responsible for carrying out all Canadian defense construction.

Johnson said the organization has awarded 3,000 contracts for more than $600 million of construction in the last four years. He said 90% of this work was complete.

Defense construction this year will amount to about $100 million, Johnson said. Biggest projects will include construction of the mid-Canada radar line, which Canada will build concurrently with United States; construction of a radar line farther north, and construction of Canada's largest military camp at Gagetown, New Brunswick, at a cost of $45 million.

A Code of Good Practice

1. Competitive tenders (bids) should be opened at a fixed time and in the presence of the tenderers or their representatives.

2. A contractor should neither seek nor accept information concerning a competitor's bid prior to the opening of tenders.

3. An owner should not re-call tenders unless there is a substantial change in the scope of the work, in market conditions, or other factors affecting cost; in such cases only the three lowest tenderers should be invited to tender again.

4. A contractor should use tenders only from qualified subcontractors.

5. A contractor should never make known the tender of any subcontractor to any other subcontractor before the closing of tenders.

6. A contractor should never use the tender of a subcontractor in order to secure a lower proposal from another bidder.

7. Subcontractors should be advised immediately after the close of general contract tenders as to whether their tender was or was not used in the making up of the contractor's tender.

8. A contractor should award each subcontract to the qualified subcontractor tendering the lowest price; if the award is made to any other subcontractor, it should be at the latter's tendered price.

9. A contractor should pay all subcontractors and others as promptly and in like proportion as he is paid for his contract work.

10. All services performed by one contractor for another where payment is required should be recorded and signed for daily; agreement with regard to the payment for such job services should be reached and recorded in writing before work commences.

Air Conditioning

Blended, high-velocity air system installed in big New York bank building

The first big installation of blended, high-velocity air for heating and cooling is being made in the Seaman's Bank for Savings, 30 Wall St., New York. The same system is in operation in some small installations, but the 12-story building in New York's financial center is the biggest installation yet.

Individual controls for temperature regulation are provided at each perimeter room in the building. Hot and cold air are mixed at blender units under every window.

For the building's perimeter-zone heating and air conditioning, two big primary fan installations on the roof drive both hot and cold air through circular ducts to 300 blender units installed throughout the building at sill level. Heating and cooling coils near the roof fans provide all heat and cooling for the system at one spot.

In the hot summer months, return air, moved by exhaust fans, is mixed with the dehumidified outside air (30% by volume in this case) and passed through cooling coils at the primary fans to get maximum economy and benefit out of the equipment.

Air stream pressure at the primary fans which activate the high-velocity system is 6 in. static water gage. Through resistance in the ducts themselves, this static pressure is reduced to a maximum of 3.5 in. at the blender units.

A thermostatic control activates a damper in each blender unit to provide a proper mixture of hot and cold air. The two ducts needed for each blender unit are furred in between window and rise up through the various floors to the distribution ducts at the top-floor level. Air temperature for the top 11 floors is controlled by this system. Basement and main floor of the bank have conventional air-conditioning systems.

Any area of the building can obtain cooling while any other area can be heated.

In the intermediate season between spring and summer, for example, cool air from outdoors can be drawn into the system to save on refrigeration cost.

The high-velocity air permits an appreciable reduction in duct sizes: ducts run from 4 in. to 30 in. in diameter. Complex steam and cold-water piping are eliminated in the system. The only such lines needed simply run to one location at the primary fans on the roof.

For the building's interior-zone heating and cooling, there is a third fan installation on the roof that feeds hot and cold air down through the building. This air for the interior zone is blended at a large central unit on each floor. The unit also contains a fan installation to give a further boost to the air stream.

Designers of the system believe that it is competitive in cost with any other zone-controlled heating and cooling system. In addition, they say it offers greater flexibility in individual room control.

The consulting engineer firm of Edward E. Ahley, New York, designed the air system, and the William L. Crow Construction Co., New York, is the general contractor. Halsey, McCormack and Helmer, Inc., New York, are the architects. Alvord & Swift are subcontractor on the air system.

Building Is Air Conditioned By Packaged Heat Pumps

The six-story Mutual Savings Life Insurance Co. building in Decatur, Ala., has been completely air conditioned by packaged heat pumps, making it one of the largest office buildings in the world with this equipment throughout.

A total of 13 heat pumps were installed. Three will air condition the first floor and the basement. Ducts bring return air from the first floor to the basement units.

Air from floors two to six returns through doors and hallways without the use of ducts. On these floors, units have thermostatic controls that permit one of the two units on the floor to shut off when only one is needed. Each floor except the first has a single zone system and is served by a large supply duct running the length of the building.

Installation costs were reported to be higher than on other systems, but operating cost was estimated at only about 75 a month—considerably lower than in some systems.

General Electric's Weathertron Department supplied the equipment and made the installation.

Desalting Sea Water

The University of Washington will conduct pilot plant tests of desalting sea water by freezing under a contract with the U. S. Department of the Interior.

The tests will seek to determine whether the freezing method is practical on a commercial basis. The pilot plant will be designed after a study of commercial freezing equipment now in use in the Seattle area. It will have a capacity of 200 lb of ice daily.

Housing Legislation

Congress faces demands for easing restrictions on public housing starts

Congress is being asked to iron out wrinkles in federal public housing legislation and to bolster incentives for continued high level activity in the homebuilding and repair industry.

Although congressional Banking Committees have planned early consideration of the White House request for 70,000 new public housing starts in the next two years, it looks like priority may be given to revising existing law.

Certain restrictions written into last year's law authorizing 35,000 starts have been causing trouble. For one thing, they limit public housing to families displaced by "urban renewal" and "slum clearance" programs. A city can't avail itself of the public housing offer until it has filed a plan with the Housing and Home Finance Agency, clearly demonstrating its needs.

Existing law sets a June 30 deadline for committing the authorized 35,000 units. So far, only three cities have HHFA-approved programs – Chicago (see page 31), Clarksville, Tenn. and Somerville, Mass. (ENR Nov. 25, 1954, p. 15). At the present rate of compliance, it appears that a large percentage of the 35,000 still will not be allotted by June 30. So, a move will be made to knock out this time limit.

Moreover when Congress gets around to taking up the requested authorization for 70,000 starts, an effort will be made to leave out the restriction which limits the program to families displaced by slum clearance and urban renewal.

Other items of housing legislation that Congress will be forced to act on as result of June 30 expiration provisions:

- Home repair program under Title I of National Housing Act.
- Military housing insurance.
- Standby authority to aid construction of housing and community facilities in critical defense areas.
- Direct loans to veterans for home or farm purchase.

Housing Administrator Albert Cole will ask Congress for these technical revisions to the present housing law:

- A $10,000 instead of $2,500 limit on FHA and VA insurance on home repair or improvement loans made by Federal Savings and Loan Associations.
- Elimination of cost certification requirements in Section 221 programs designed to provide special insurance on loans for private housing needed for displaced persons under the "urban renewal" program.

Homebuilders Look at Future

NAHB annual meeting hears predictions of expanding market for homes if wise policies are adopted by all

Frederick S. Merritt
Associate Editor

The nation's homebuilders met in Chicago last week to rejoice at the state of the housing industry and study ways to keep it booming.

About 21,000 builders architects, engineers and others interested in housing attended the four-day annual meeting of the National Association of Home Builders. More than 30 panel meetings were held, and nearly 350 manufacturers set up 550 exhibits of the latest in building materials and equipment.

The homebuilders chose Earl W. "Flattop" Smith of El Cerrito, Calif., their new president. (Smith has erected more than 11,000 of the flat-roofed, low-cost homes that won him his nickname).

Joseph B. Haverstick of Dayton, Ohio, was elected first vice president; V. O. Stringfellow of Seattle, Wash., was named second vice president; Franklin L. Burns of Denver, Colo., treasurer; and Carl Mitnick, Merchantsville, N. J., secretary.

John M. Dickerman, NAHB's executive director, gave the organization the good news that it now has a membership of close to 33,000—a 13% increase in the last year. He said membership had shot up 110% in the last five years.

• Market for homes still growing—1954 was the second best year in history for housing, but speakers at the meeting and panel discussions emphasized that the demand for housing still is great and is likely to increase.

To stimulate housing construction the homebuilders put together a number of recommendations in a policy statement that covered a wide variety of problems affecting the industry. The statement:

- Supported the National Voluntary Home Mortgage Credit program to aid borrowers in money-short areas.
- Urged revision of the Federal National Mortgage Assn. to improve its efficiency.
- Recommended wider use by the Federal Housing Administration of its temporary fee appraiser system, more realistic rates to assist in obtaining the services of qualified per diem appraisers, establishment of a trainee program to attract competent young men into appraisal and cost estimation and legislation to permit FHA to retain a part of its earnings.
- Warned homebuilders to keep their prices down and urged materials suppliers and labor to adopt hold-the-line price and wage policies.
- Opposed proposals to deprive construction workers of the protection of the Taft-Hartley Act and came out against amending that law to restrict or ban state right-to-work laws.
- Offered to cooperate with the newly organized American Council to Improve Our Neighborhoods (ACTION) in urban renewal and development work.

• Prospective markets—Several speakers called attention to large groups of the U. S. population whose demands for housing are not being satisfied and who represent large, profitable markets for homebuilders. R. G. Hughes, outgoing president of NAHB, told the meeting that housing for minority groups and community facilities for fast-growing suburban areas are the two biggest problems facing the industry. NAHB has committees working on both problems with government officials and other industry groups.

Reginald A. Johnson, director of housing activities for the National Urban League, pointed out that the Negro market is an important part of the total housing market and can be profitably served. He said that the minority market alone will require at least 250,000 non-farm units per year for the next 10 years.

Sen. John J. Sparkman (D.-Ala.) said the industry is not yet reaching to a satisfactory degree the potentially lucrative market that exists in the $3,000 to $5,000-per-year-income families. It is especially imperative, he said, that these families do not have to pay so great a part of their incomes for housing as to drive them into crowded slums or force them to cut down dangerously on other necessities.

Albert M. Cole, HHFA Administrator, called attention to another market. Urban renewal is a job for private enterprise that will pay off he said (ENR Nov. 25, 1954, p. 15).

• Outlook for '55—Economists participating in a panel discussion expressed cautious optimism about 1955. George D. Conklin, Guardian Life Insurance Co., New York, foresaw a rise in the economy—but not a boom—and a slight increase in the interest rate (see page 123).

Edwin B. George, director of economics for Dun and Bradstreet, Inc., said business prospects were fairly bright. He foresaw the gross national product continuing upward throughout 1955 and corporate profits improving. And Ewan Clague, special assistant to the Secretary of Labor, predicted housing activity would remain high because people have money to spend and mortgage money is plentiful. He predicted that building costs will remain stable.

In contrast, Ralph R. Crosby, president of the Old Colony Cooperative Bank, Providence, R. I., and a past president of the United States Savings and Loan League, warned that the growing use of government-underwritten home credit and the decline of the conventional loan may contain "the seeds of destruction" of a free homebuilding industry and open the way for direct controls over sales, prices and profits. He urged homebuilders to use the conventional loan program.

FHA Commissioner Norman P. Mason, told the homebuilders the industry was not conducting sufficient technical research. He proposed that homebuilders set aside $1 per house for a research program to develop new and less expensive ways to build houses. This would give them $1 million per year for research.

The homebuilders also heard a preliminary report on the air-conditioned village project of the NAHB Research Institute. At Austin, Texas, 22 houses were built last year to obtain initial and operating cost data on air conditioning, method of computing size of equipment and other technical information. Results to date indicate that the owners generally are satisfied from a comfort viewpoint and are not disturbed over costs. But there are indications that steps should be taken to make the installations less noisy.

Firm Gets Extra Payment Because Borings Were Off

A Florida arbitration board has awarded an extra payment of $298,274 to Merritt-Chapman & Scott Corp. for bridge job in Jacksonville on the ground that preliminary borings were inaccurate.

The firm contended that the borings on which plans were based for the John E. Mathews Bridge did not properly reflect actual river bottom conditions. It said the $12-million structure would have been completed within the 515-day time limit had the borings been accurate.

Instead, the firm charged, 64 additional days were required to complete the job. Merritt-Chapman & Scott Corp. asked for $306,000 for those 64 extra days. The arbitration board made the award after the State Road Department declined to pay the claim.

River Diversion

Engineers consider how to accomplish diversion at Missouri River dam

Army Engineers and the major contractors on the job have decided that pinching down the flow of the Missouri River is the best way to accomplish diversion at Gavins Point Dam, near Yankton, S. D.

Representatives of the Western, Massman and Jones combine, which holds the major Gavins Point contract, met with Army Engineers to consider alternate methods in response to a plea from barge line operators for a diversion operation that would not interfere with navigation.

The contract calls for diversion when the gap in the dam embankment—now 600 ft—is narrowed to 150 ft. The flow of the river, normally about 25,000 cfs in July, will be pinched down to between 5,000 and 7,000 cfs by Fort Randall Dam, 75 mi upstream from Gavins Point. Two draglines with 75-ft booms, working on opposite sides of the river, then will place an earthen dike to accomplish diversion.

Barge operators protested that diversion by this method would reduce their operations at least 14%. Although the diversion operation would take only a few days, the river would have to be closed off and brought back gradually over a two- or three-week period to prevent downstream damage. Barge traffic would be closed down until the river filled again over the 800-mi reach downstream to St. Louis.

At best, the navigation season on the Missouri River is short. Last year boats were on the river only 28 weeks, but they carried an all-time record total of 283,000 tons.

This year, barge operators estimate the total may be expected to reach 500,000 tons if conditions are favorable. But in addition to the problem of the Gavins Point diversion, barge operators face the prospect that the navigation season may be shortened. Snowfall so far this winter has been extremely light over the Upper Missouri Basin, and prospects are for a spring runoff far below normal.

The alternative methods of accomplishing the diversion considered were:

- Placing the diversion dike hydraulically with the dredge, Western Chief, as was done at Fort Randall Dam.
- Making the diversion with dump trucks operating off a trestle, as was done at Garrison Dam.

On both these jobs, diversion was accomplished against a volume greater than 20,000 cfs. Additional studies of these alternate methods will be carried out, but it appeared that the cost-benefit ratio would be found to rule against them.

Present at the discussions were Marshall Jones, president of Western; J. Davidson, vice president of Massman; and Lorenz Straub, head of the hydraulics engineering department at the University of Minnesota and director of St. Anthony Falls Laboratory there, who served as consultant to the contractors.

Army Engineers who attended the meeting included: Col. Thomas J. Hayes, chief of the Omaha district, Wendell E. Johnson, chief of the Engineering Division of the Missouri River Division, and George Evans, area engineer in charge of Fort Randall and Gavins Point Dams.

Nuclear Energy Is Theme Of First EJC Convention

Engineers Joint Council, now composed of representatives of eight engineering societies with a total membership of 170,000, held its first general assembly at a one-day meeting in New York City last week.

Formerly functioning only through panels and committees, the EJC took for the theme of its first annual convention: Nuclear energy development for peaceful purposes. Expansion of the nuclear field, cutting across the traditionally distinct branches of engineering, affords the profession "the first bold experiment in inter-society cooperation," the delegates were told by John Dunning, Columbia University dean of engineering.

The convention theme also was tied to EJC's plans for a Nuclear Engineering and Science Congress which is scheduled to be held in Cleveland Dec. 11-17, 1955.

On the controversial issue of engineer unionization, the composite results of recent polls of 112,225 ASCE, ASME and AIEE members were disclosed for the first time. Of the 57% responding to a questionnaire, 3.7% were members of collective bargaining units; 27% were not opposed to unionization; 20% felt collective bargaining would be advantageous to them.

Discussions also dealt with the problem of the engineering manpower shortage and the need for national policies that will enhance and conserve engineering skills.

Thorndike Saville, ASCE member and dean of New York University's College of Engineering, presided as newly elected EJC president. Edgar J. Kates, New York consulting engineer, is vice-president.

Korean Contracts

Several big construction awards have been made; more jobs will develop

U. S. construction companies are beginning to get some important contracts under the Korean aid programs. Bigger opportunities are sure to develop as the Army begins to taper off its construction activities in Korea.

Some of the biggest construction contracts let under various Korean aid programs to date:

- Three thermal power plants with a total capacity of 100,000 kw due for completion in 1956; contract let to Pacific Bechtel Corp.; total cost about $30 million.
- A urea fertilizer plant, annual capacity of 40,000 metric tons nitrogen content, due for completion in 1957; contract being negotiated with F. H. McGraw Co.; total cost about $23 million.
- A flat glass plant, annual capacity 12-million square feet; contract let to Frazier-Simplex Industrial Corp.; cost $2,149,074.

A rough idea of the potential for U. S. contractors in Korean construction programs can be obtained from a look at the money available. In fiscal 1954, the total U. S. aid program in Korea came to $265 million of which $83 million went into capital investment involving construction. Of this, about $55 million was contracted to private American firms.

The total appropriation for fiscal 1955 was $280 million of which $150 million is earmarked for capital investment. About $55 million of this probably will go to private firms.

The aid program in fiscal 1956 probably will be in the neighborhood of $300 million.

Open-Grid Bridge Deck Preferred Despite Cost

The low bidder for construction of the 15th St. Bridge in Allentown, Pa., was awarded the contract last week—but not at the low bid.

Edward A. Dayler Co., Coatesville, Pa., bid $631,000 for a concrete slab and steel I-beam composite design and $683,000 for an open steel grid floor on steel beams. Lehigh County commissioners chose the grid floor. They approved the higher cost to eliminate the snow removal problem.

As designed by G. Edwin Pidcock Co., Allentown, Pa., the bridge will consist of five continuous spans carrying three traffic lanes. End spans are 70 ft and interior spans 87 ft long. A 70-ft prestressed concrete overpass is included in the contract also.

Jobs in the News

ORDNANCE WORKS—The Ordnance Department of the U. S. Army is negotiating with Associated Contractors, Birmingham, Ala., on a cost-plus-fixed-fee contract for construction of the Alabama Ordnance Works, Childersburg, Ala. Estimated cost is $46 million.

DEVELOPMENT—Precision Housing Corp., Cleveland, Ohio, will construct with own forces a housing development and shopping center in the Cleveland suburb of Parma Heights. Total estimated cost is $20 million. F. A. Pease Engineering Co., Cleveland, is the consulting engineer.

HOTEL—Matthew H. McCloskey & Co., Philadelphia, has been selected as general contractor for construction of a 22-story hotel in "Penn Center," Philadelphia, for Sheraton Corp. of America. Estimated cost is $15 million.

CITY HALL—R. P. Farnsworth & Co., Inc., New Orleans, has received a contract for construction of New Orleans' new city hall and civic center. Estimated cost is $7 million.

HOUSING PROJECT – Thompson Construction, Inc., Minneapolis, Minn., will construct a housing project in Coon Rapids, Minn. Estimated cost is $6.5 million. H. W. Friedland, Minneapolis, is architect.

FACTORY—Huber, Hunt & Nichols, Inc., Indianapolis, has been awarded a contract for construction of General Electric's Industrial Heating Division plant on an 82-acre site in Shelbyville, Ind. Estimated cost is $5 million.

HOSPITAL—R. P. Farnsworth Co., Inc., New Orleans, La., was low bidder for construction of a hospital at Keesler Air Force Base, Biloxi, Miss. Bid was $4.5 million. York & Sawyer, New York, are architects.

Bureau of Mines to Study Feasibility of Coal Pipeline

The U. S. Bureau of Mines coal laboratory will study the feasibility of sending low-grade Rocky Mountain coal by pipeline to industrial centers.

The project is expected to get under way about July 1. Details have been worked out by Dr. Louis C. McCabe, chief of the bureau's Solid Fuels Division, V. F. Parry, head of the laboratory, and John H. East, Jr., regional director.

Parry will have direct supervision of the study and experiments. He said three engineers will be assigned to the initial phase of the project to correlate and evaluate all available information on the hydraulic transportation of coal.

In the course of the study, Parry said, coal would be crushed into ¼-in. pieces which would be suspended in water for transportation in a pipeline. He said the major aims of the project would be to determine:

- How much it would cost.
- What special alloys would be needed to fortify the pipe against the battering of pressured coal.
- What would be the effects on the railroad industry.

Before an experimental pipeline is constructed, Parry said, engineers will conduct general tests of materials and determine how coal breaks up and floats in a line. He said it probably would be a year before the laboratory builds an experimental pipeline.

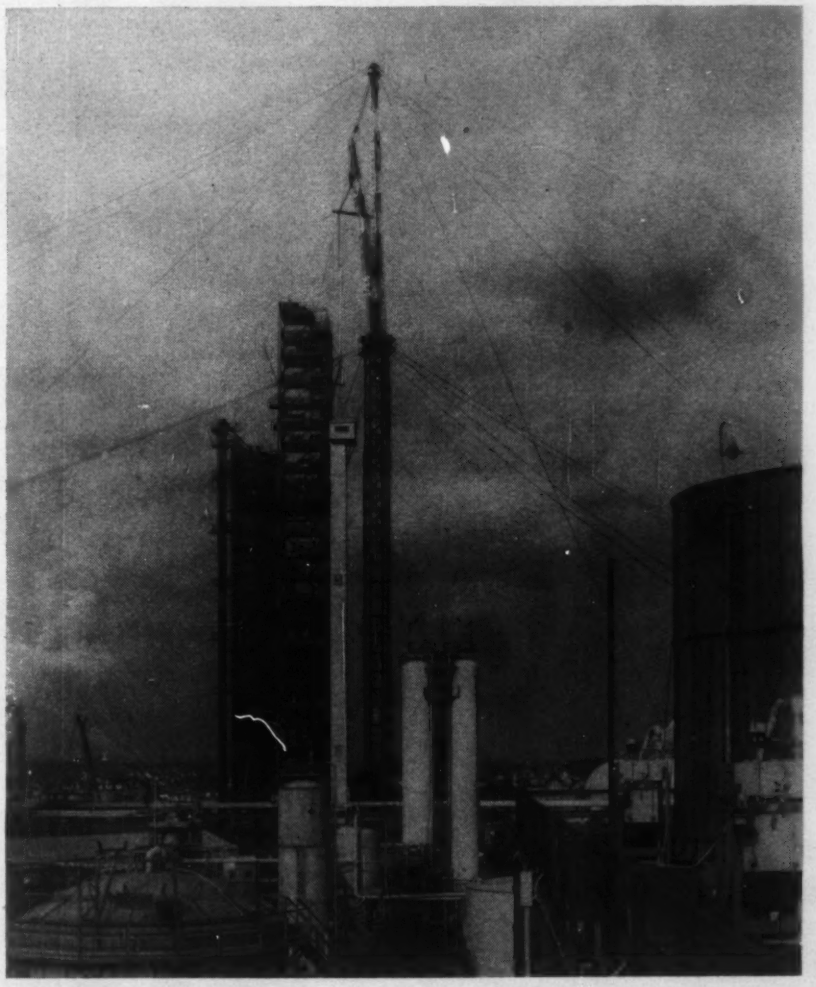
"Our first efforts," he said, "will be to study theories, evaluate the properties of the various coals in the region and consolidate all available information on the subject."

If Iowa Builds Its Toll Road Nebraska Can Build One, Too

A traffic survey reported that construction of a toll road linking Omaha and Lincoln, Nebraska's two largest cities, would be feasible only if the proposed turnpike across Iowa is built.

The report by Coverdale & Colpitts, New York consulting engineers, said the volume of local traffic between the two Nebraska cities would not justify the cost of a toll road.

The Omaha-Lincoln road, the report said, would have to depend on traffic funneled into Omaha by a connection with an Iowa turnpike. Long-haul traffic now crosses Iowa by five or six routes.

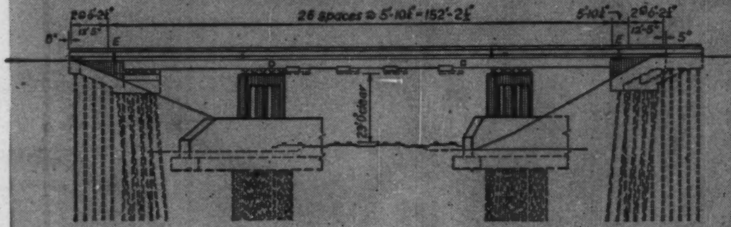


Derrick Is Up in the Air

This derrick towers 442 ft above the ground. It is being used to erect units 335 ft high at the Sun Oil Co.'s Toledo refinery. The 158-ft guy derrick is mounted on a 284-ft tower, which is 10 ft square and guyed in four directions. The derrick has a 120-ft boom and is capable of lifting 100 tons at a radius of 75 ft. The equipment was designed and fabricated by Chicago Bridge & Iron Co. Catalytic Construction Co. is general contractor for this installation.

On this one 12.3 mile section

Maumee
Rossford
Perrysburg
33-65-68
199
120
795
65
20

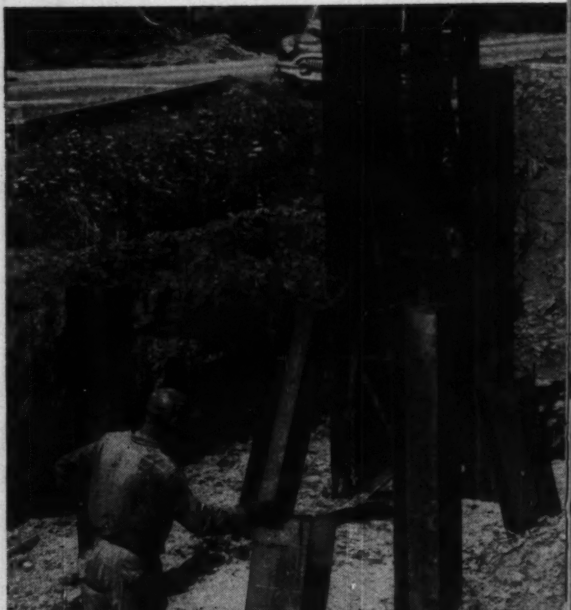

28 spaces @ 5'-10½" = 152'-2½"
2@6'-2½"
5'-10½"
2@6'-2½"
12'-5"
12'-5"
5"
5"
E
E
23'-0" clear

ELEVATION
TURNPIKE BRIDGE ACROSS B & O RR. TRACKS
near Toledo, Ohio

OWNERS: *Ohio Turnpike Commission*
Columbus, Ohio

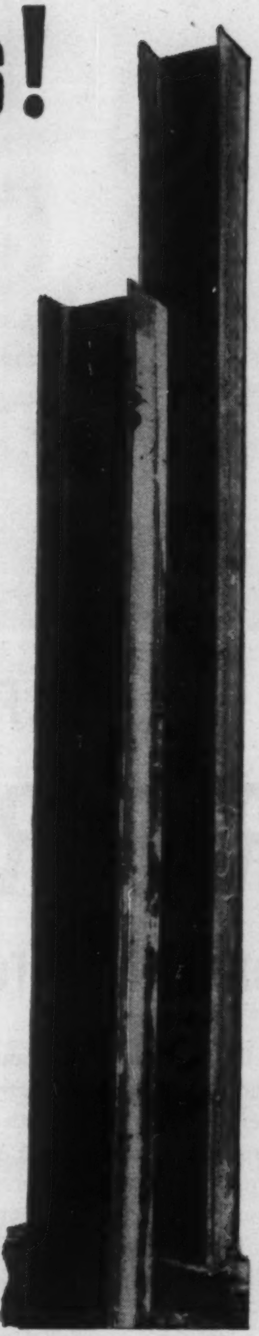
CONTRACTOR:
Design Section D-15, Badgett-Central-Soo, Winona, Minn.

CONTRACTING ENGINEERS:
SANZENBACHER, MORRIS & TAYLOR-BROOKHART & TYO, Ohio—Harrisburg, Pa.



# of the new Ohio Turnpike . . .

104,090 lineal feet of USS Steel H-Bearing Piles!



Design Section D-15 on the new Ohio Turnpike covers only 12.3 miles of road. Yet, in this relatively short distance, approximately 2100 USS H-Bearing Piles were driven, with an average length of 40′.

The pictures at the left were made at the bridge site where the Turnpike crosses over the B & O Railroad tracks, approximately two miles northeast of the town of Perrysburg. 9,030 lineal feet of steel piling were used at this location. No driving difficulties were encountered in the clay and sandy soil. The maximum depth required at the bridge site was only 89′.

Except for the amount of piling used, Design Section D-15, is a typical example of the use of steel H-Bearing piles in modern road and bridge building.

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USS Steel H-Bearing Piles

USS

UNITED STATES STEEL

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The mound of granite was leveled by a controlled blast (small photo) of 26,400 pounds of Gelamite® dynamite primed with Hercules® Short-Period Delay Electric Blasting Caps. The excellent fragmentation is apparent in the broken rock pictured above.

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XR55-1

CITY BY CITY

Big Attack on Slums

Chicago—Chicago has fulfilled conditions prescribed by the Housing and Home Finance Agency to qualify for federal aid for a multi-million-dollar urban renewal and slum clearance program.

One rough estimate places the cost at $30 million to $40 million, spread over the next three to five years. Currently, the City Council has approved applications for 3,800 public low-rent housing units, estimated to cost $40 million to $50 million. They are to meet relocation needs of low-income families who will be displaced by the city's redevelopment and neighborhood rehabilitation programs.

A 59-page report supporting the application for federal approval sets forth the city's program for eliminating slums and rehabilitating blighted areas (ENR Nov. 25, 1954, p. 15). It contains seven major sections, and over 100 listed references to exhibits containing codes, studies and analyses.

These are among the highlights of the seven-point program.

- Housing displaced persons—The general policy of the city and other governmental agencies involved in land-clearance activities is that each must assume responsibility for finding suitable housing for displaced families. Relocation services should be provided, and the cost should be accepted as part of the project cost.
- Community plan—Major elements of a general plan for Chicago are either completed or nearing completion. The city's zoning ordinance will be entirely revised this year, and planning functions of various city departments and independent agencies are being closely integrated.
- Codes and ordinances—State statutes and local ordinances are considered adequate to enable the city to engage in the slum clearance and control of the spread of blight. The city has no housing code, but most of the provisions of such a code are distributed throughout the municipal code. And except for provisions to prevent overcrowding, it is believed that these requirements closely approach those found in nationally recognized standards.

Heliport on the Hudson

New York City—Construction of the first commercial heliport in midManhattan may get underway in two or three months.

The heliport would be built atop a freight-forwarding terminal on the Hudson River between 28th and 32nd Streets. One of the chief advantages of the site is that travelers could reach midtown in five minutes from outlying airports.

Present plans call for an L-shaped structure with a finger pier at a right angle to the shoreline and the base of the L abutting the shoreline. Provision for unloading railroad-car floats and for transfer of a cargo to trucks at street level would permit triple use of the waterfront property.

Cost of the project is estimated at around $1.2 million. Strengthening the pier roof to handle 20-passenger helicopters would cost an additional $150,000 to $250,000.

1955 Sewer Program

Columbus, Ohio—Columbus is getting set for a summer start on a $17.3-million sewer expansion program—part of its metropolitan master sewer scheme. And some $13.9 million worth of more work could get underway if the present plans for annexation materialize.

The city, according to conservative estimates, will be able to issue $25 million in sewer revenue bonds to finance the program.

Largest items in the 1955 program are a 35 mgd treatment plant at the junction of Big Walnut and Alum Creeks (south of Columbus), and an Alum Creek trunk sewer. Each one of these projects will cost an estimated $8 million.

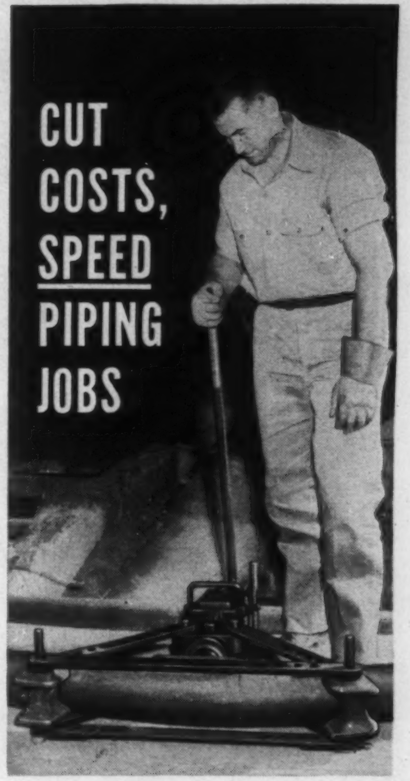
Plans for the new plant and trunk sewer now are being drawn up, and land is being acquired. Construction is expected to take from 18 months to two years to complete.

Three other trunk sewers to serve the newly annexed area in Truro Township will be built at a cost of some $1.3 million. One of these already is under construction and contracts for the other two will be awarded early this spring.

If new annexations call for it the city is ready to spend $7.8 million on four more trunk sewer lines and with these facilities in service, enough additional revenue would be collected to finance the $6-million job of constructing two other trunk sewers.

Columbus' estimated sewer revenue for 1955 will total $3.5 million—about five times the amount collected in 1952. Cost of operating the system this year reportedly will run about $1.4 million.

(City by City continued on page 32)



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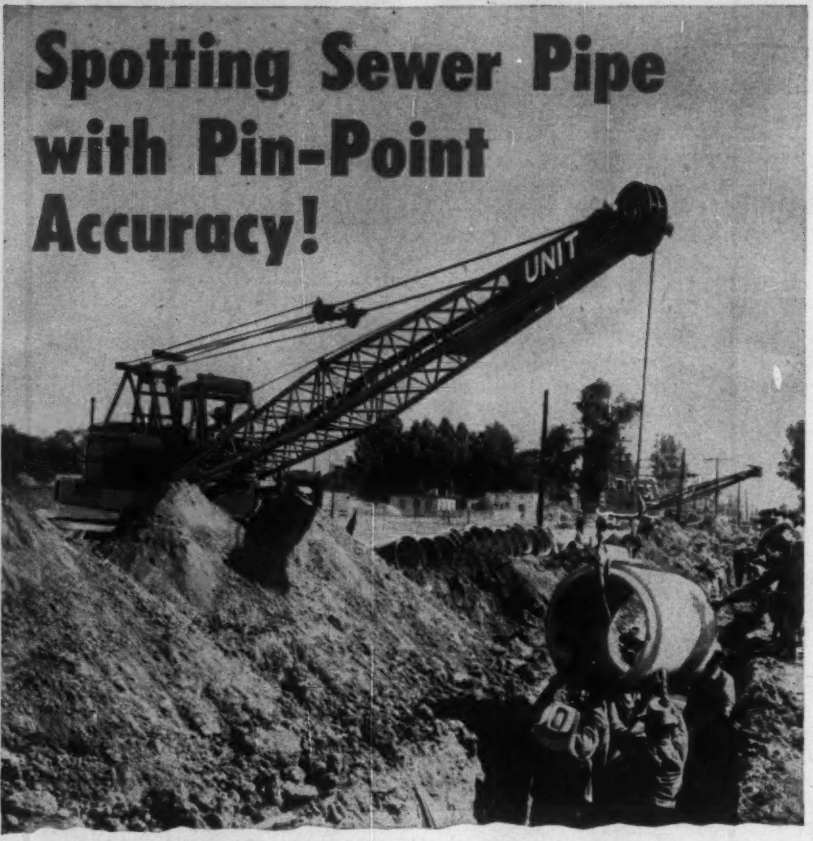

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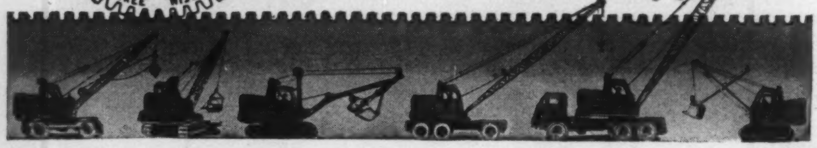

CITY BY CITY

Transit Study

New York City—The Port of New York Authority will put up $500,000 for a new study of railroad service between Manhattan and New Jersey.

Earlier investigations by the bi-state agency concluded that rail communication in the metropolitan area could not be self-supporting. But the new 18-month study will seek a financially practicable and politically feasible plan of meeting deficits and debt charges if it is found that such losses appear to be inevitable.

The survey, limited to the rail commuter problem of New York and New Jersey, will be made for the Metropolitan Rapid Transit Commission. This agency—also a bi-state one—was set up last year to study regional rapid transit outside of the New York City Transit Authority's jurisdiction.

Consultants will be hired to decide on the most feasible system of integrated rapid transit between the two states. Five types to be considered are: an independent bi-state loop system connecting all rail commuter lines at appropriate interchange points in New Jersey with stations in Manhattan; construction of new Hudson River tunnels with track connections in New Jersey to link with units of Manhattan's subway system; a bi-state high-speed system of the monorail or aerial transit type between Manhattan and the New Jersey shores; the present rail-ferry service.

Code Overhaul

Phoenix, Ariz.—Sharper teeth have been put in the Phoenix housing code to speed slum-area cleanups. The overhaul of minimum standards places the code in line with federal requirements for slum clearance assistance.

Persons maintaining dwellings found to be so dilapidated, dangerous or unsanitary as to be a menace to public health and safety will be penalized for failure to meet these requirements:

- Every city dwelling must have a kitchen sink, flush water closet, lavatory basin, and a bathtub or shower.
- House plumbing must include both hot and cold water lines with outlets properly connected to a water and sewer system approved by the health officer.
- Every dwelling must contain at least 125 sq ft of floor space for the first occupant, and 75 sq ft for each additional occupant.
- Sleeping rooms must have a ceiling height of at least 7½ ft.
- All dwellings must meet standards for light, ventilation and heating.

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Engineer in Charge of Job — Jack Twomey
Construction Engineer — Max Gold
Project Engineer — Jack Contin
T and T Construction Co. — Brooklyn, N. Y.

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sewage and sewage gasses . . .
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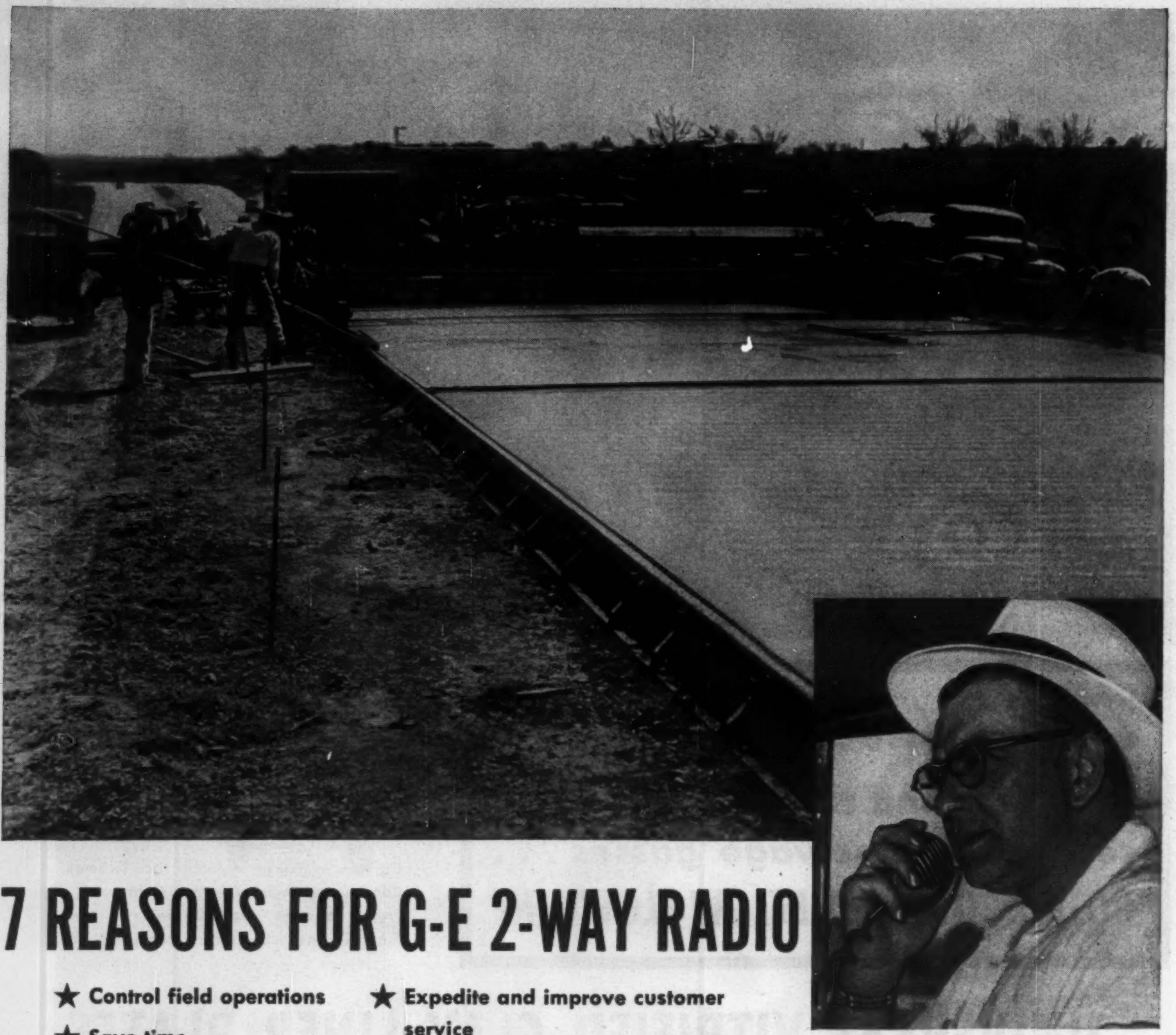

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THE importance of 2-way radio to you *for any reason* is actually a point in favor of selecting G-E equipment! Radio saves you money. Don't lose this money on an expensive-to-maintain communication system. Buy G-E! Its reputation for low cost maintenance requirements is widely respected throughout your industry! And, radio must perform on-the-job *at all times.* When it fails, your profit takes a beating! Superior G-E design . . . G-E components function to protect profit . . . provide always dependable performance. Select 2-way radio equipment carefully and know why G-E is preferred by leading companies in your business.

For additional details write to: *General Electric Co., Section X2215-27, Communications Equipment, Electronics Park, Syracuse, N.Y.*

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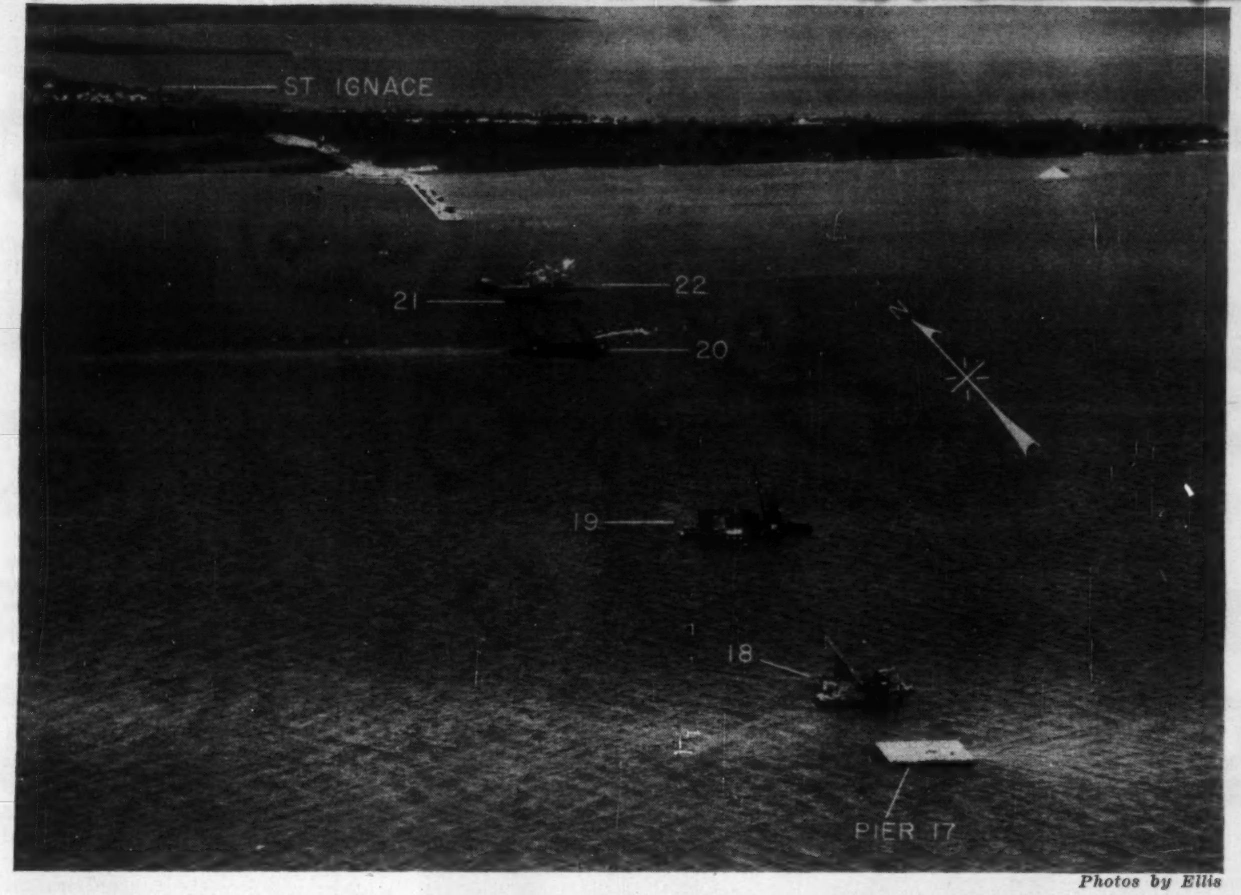
ST. IGNACE
21
22
20
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19
18
PIER 17

Photos by Ellis

Mackinac Straits bustled in 1954 as heavy marine equipment pushed six main piers of . . .

Mackinac Bridge—Incredible but True

From an engineering standpoint, the four-lane toll bridge being built across the Straits of Mackinac—linking Michigan's upper and lower peninsulas—is a 20th century marvel.

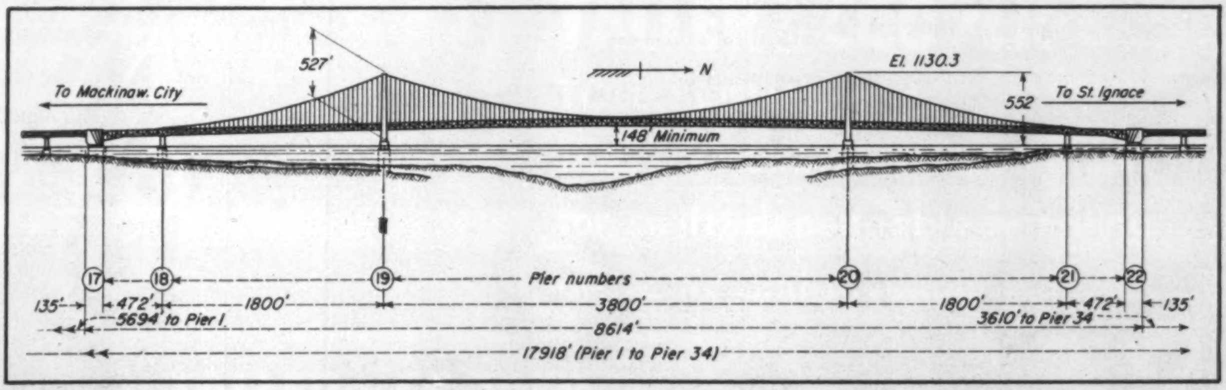
From a construction standpoint it poses a variety of knotty problems peculiar to a long-span suspension bridge spanning deep water.

For its backers it represents a 70-year-old dream come true. But to the average tourist ferrying across the straits this season, the idea of bridging the wide expanse of deep water between Mackinaw City and St. Ignace seemed incredible. This, despite the fact that one of the most impressive arrays of marine construction equipment ever assembled for such a job could be seen building the six main piers.

In fact, the construction target for 1954 was to get these six substructures—the two main tower piers Nos. 19 and 20, the cable-support piers 18 and 21, and the two anchorage piers 17 and 22—built up to either near or above water line before the job shut down for the winter (ENR Sept. 2, 1954, p. 26).

By next summer ferry passengers will become less skeptical as these six big piers rise above water and construction gets into full swing on the other 28 piers. And by Nov. 1, 1957

(*Continued on page 36*)


527'
El. 1130.3
N
To Mackinaw. City
552
To St. Ignace
148' Minimum
17
18
19
Pier numbers
20
21
22
135'
472'
1800'
3800'
1800'
472'
135'
5694' to Pier I.
3610' to Pier 34
8614'
17918' (Pier I to Pier 34)

IT'S THE LONGEST: 3,800-ft center span; 1,800-ft side spans; 472-ft backstays; and massive anchorages 135 ft wide add up to 8,614 ft—making it the longest between anchorages of any suspension bridge in the world.

. . . $5 million construction plant

—according to present construction timetables of the Mackinac Bridge Authority—motorists will be driving over the newly opened bridge. Moreover, it'll take them only 10 min. compared with an average of 53 min. by ferry, exclusive of waiting time which averages 2½ hours in summer. The new bridge will supplant the state's present ferry service.

• What makes it big—This is a big undertaking by almost any yardstick. The bridge structure itself is 17,918 ft (3.4 miles) long from Pier 1 to Pier 34. Located over the deepest part of the straits is the suspension bridge.

With its record-breaking length of 8,614 ft from anchorage to anchorage, the structure lays claim to being the longest suspension bridge in the world. Its main span of 3,800 ft between towers, is 300 ft longer than the main span of the George Washington bridge (completed in 1931), and 400 ft shorter than the main span of the Golden Gate bridge, which was completed in 1937. Side spans of the Mackinac bridge, however, are 1,800 ft, compared with 1,125-ft side spans of the Golden Gate bridge. And the Mackinac bridge also has two 472-ft unloaded backstay spans.

The two main towers, each of which will contain 6,250 tons of structural steel, will rise to a height of 552 ft above water level. And the massive concrete piers supporting them will be founded on rock nearly 200 ft below the surface of the straits.

The over-all project measures 5 miles and 44 ft in length—from Straits Ave. in Mackinaw City to a proposed interchange with U. S. Highway 2 in the outskirts of St. Ignace. Toll-collecting facilities will be on the St. Ignace side of the straits. The bridge center line runs almost due north; bearing less than 6 deg east of north.

• Setting up shop—Organizing the job last spring was similar to other deep-water bridge projects, only everything had to be planned for large-scale construction set to a fast tempo.

The huge fleet of floating construction equipment was assembled at the straits. Its total cost was set at $4 million early in the construction season. And that was probably increased to around $5 million as other major units were added.

Major items of marine equipment include: 10 derrick boats mounting 35-ton, 50-ton and 75-ton fully-revolving derricks; one grout boat with complete batching, mixing and pumping plants; four scows for hauling cement and fly ash; two welding scows; one 46,000-gal fuel scow; 10 cargo scows ranging in size from 128x32x8-ft to 204x34x11-ft; six tugs; and five 40x12-ft personnel boats named Bill, Martin, George, Mike and Tom.

Other major equipment includes two 50-ton crawler cranes, two 20-ton truck cranes, one locomotive crane, five trucks, 28 electric welders; six steam pile hammers and one extractor; seven air compressors, two core drilling machines and one tractor-bulldozer. Most of the floating equipment was newly built.

• Working areas—Three docking and working areas were established at the straits early in the program. The main installation, known as the "coal dock" is in Moran Bay, at St. Ignace. Most of the assembly operations are performed here.

A second working area is the existing 4,200-ft.-long causeway, or mole, built out from the north shore several years ago by the Michigan State Highway Department. This mole, which will be a part of the north approach to the bridge, makes an excellent storage area for steel sheetpiling, bearing piles, caisson walls, dredging wells and other bulky items for the piers.

The third working area is the village park of Mackinaw City which the contractor leased, and converted into a vast storage area with docking facilities. It is equipped with a loading spur to take care of the automatic transfer of cement and fly ash from trucks and railroad cars into barges for towing to the bridge site.

• Rough weather—Mackinac Straits for the most part is a relatively placid expanse of water. Its current rarely exceeds 4 mph. But it can get rough. And it did.

Throughout most of September and the first half of October, the contractors were harassed by high winds and heavy rains. It cut their operations to 60% of normal and hampered the delivery of materials. This was a tough set-back, but the weather cleared on Oct. 14, and construction went ahead full blast.

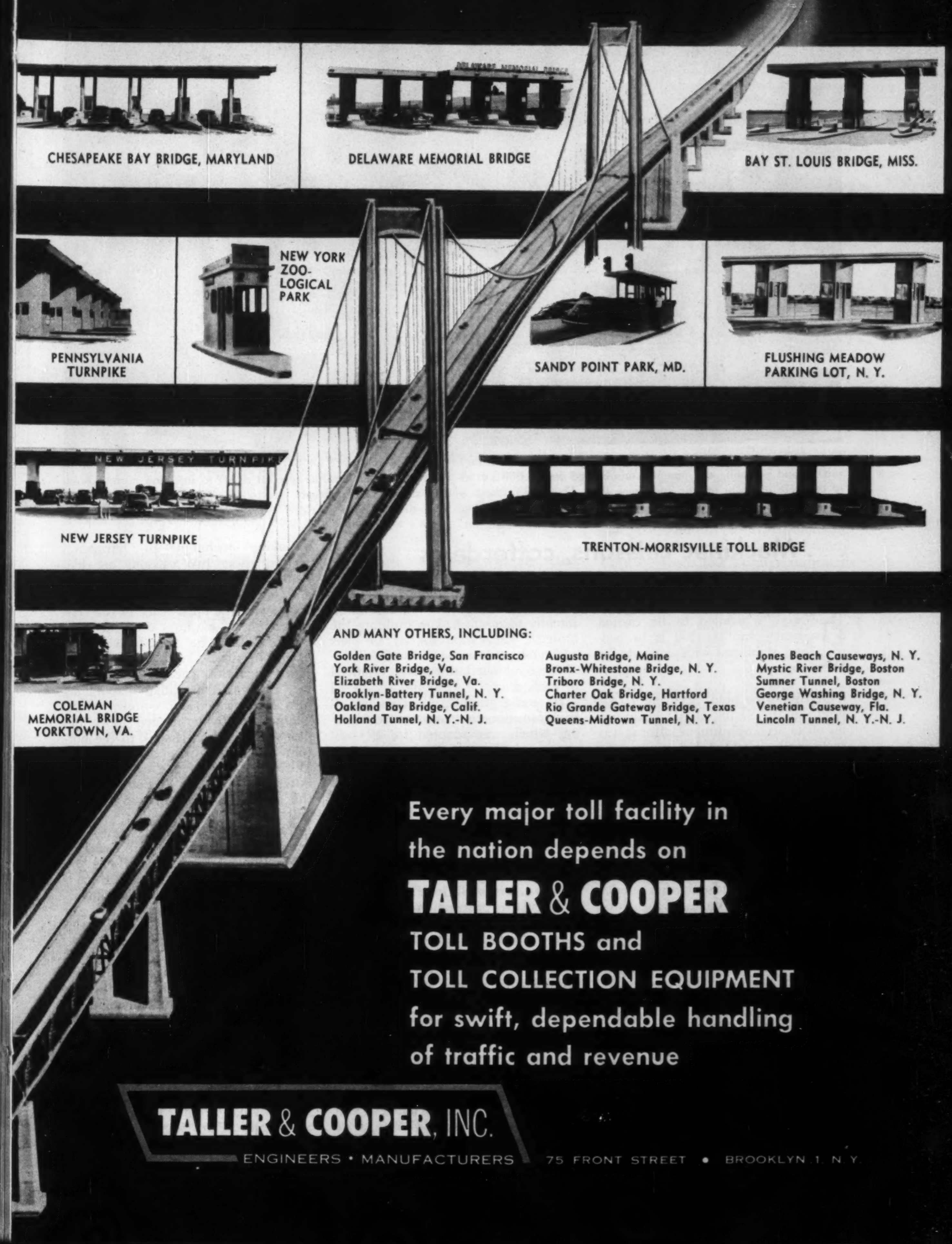
By mid-November—with a probable 30-day period of good construction weather still to come—here's how the job stood:

Both anchorage piers 17 and 22, and the north cable-support pier 21 had been completed to 10 ft above water. The caisson for the south cable-support pier 18 had reached rock 130 ft below the surface, and was being loaded with concrete. The cutting edges of the caissons for the

(*Continued on page 38*)

Mackinac Bridge—Estimated Construction Costs

Main Bridge:	
Foundations (lump sum)	$25,735,600
Superstructure (fixed unit price)	44,532,900
Concrete deck (approach truss spans)	1,300,000
Paving (suspended spans)	150,000
Approaches:	
Mole section	1,000,000
Mackinaw City	375,000
St. Ignace	675,000
Administration Bldg., Toll Plaza, Operating and Maintenance equipment	350,000
Electrical equipment	450,000
Additional borings	200,000
Engineering (lump sum)	3,500,000
Contingencies	1,005,750
Total construction cost	**$79,274,250**
Real estate	100,000
Preliminary expenses	300,000
Administration	400,000
Total (Exclusive of the cost of financing and interest during construction)	**$80,074,250**



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Oakland Bay Bridge, Calif.
Holland Tunnel, N. Y.-N. J.
Augusta Bridge, Maine
Bronx-Whitestone Bridge, N. Y.
Triboro Bridge, N. Y.
Charter Oak Bridge, Hartford
Rio Grande Gateway Bridge, Texas
Queens-Midtown Tunnel, N. Y.
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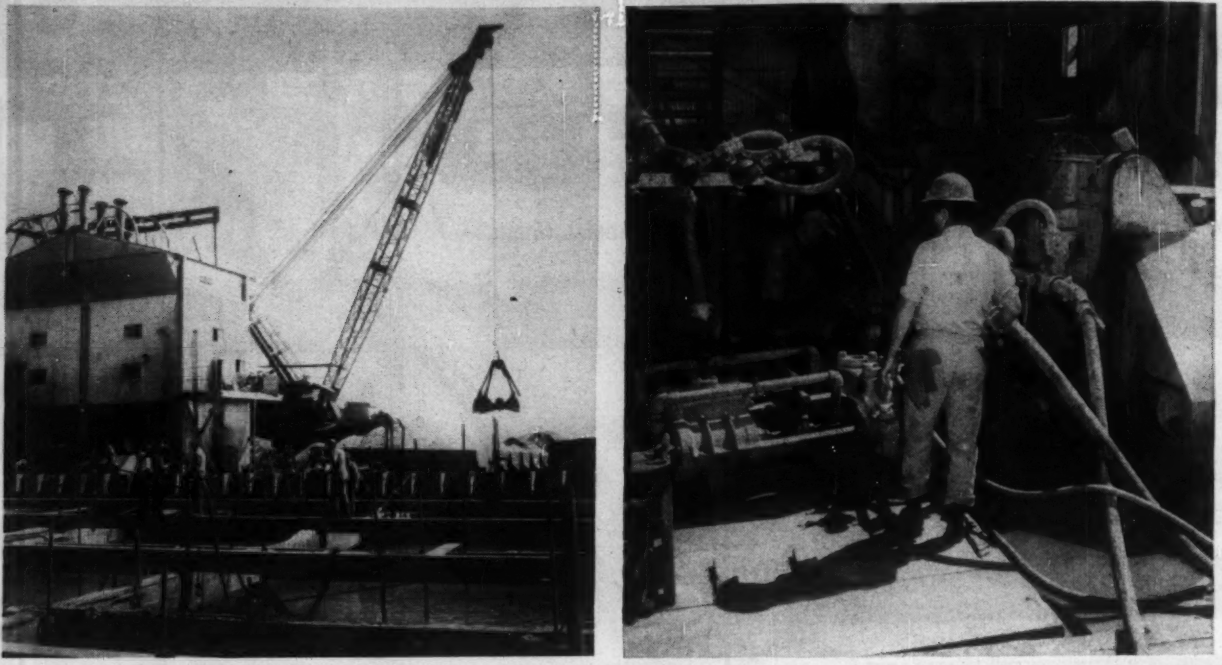

FLOATING GROUT PLANT with fully-integrated batching, mixing and pumping equipment, consolidated over 5,000 cu yd of concrete in 24 hr, at the anchorage Piers 17 and 22. Sand is hoisted from scow to plant by 3-cu yd clamshell of revolving crane, "Algonquin" (at left), while intrusion mortar is fed from pumps through flexible hose (at right) to injection pipes extending down into aggregate previously placed under water. Preplaced aggregates provided quicker stabilization of foundations.

. . . Mackinac caissons, cofferdams

main tower Piers 19 and 20 were more than 100 ft below the water surface. They were scheduled to be carried down nearly another 100 ft to bedrock, and stabilized with concrete by Dec. 15.

• Getting a toe hold—Securing a "toe hold" in the Straits of Mackinac was no mean accomplishment. But it was successfully executed last summer at Pier 17. This huge concrete monolith containing 85,000 cu yd of concrete is 115 ft wide by 135 ft long. It is anchored into bedrock 88 ft below the surface.

Due to its enormous size, the cofferdam bracing had to be fabricated and installed in three vertical sections, which were bolted together under water by divers. Each of the three bracing sections was 115 ft long, 45 ft wide and 75 ft high. Each section weighed 107 tons. They were assembled onshore, barged to the site and lowered to position by floating derricks.

• First pay-yard of dirt—Interlocking steel sheetpiles, 99 ft long, were then driven to rock completely around the periphery of the 115x135-ft framework. The sheetpiles were bolted to the cofferdam framing and on July 24 of last year, derrick boats with clamshell buckets began excavating the overburden confined within the walls of the cofferdam. This marked the first pay-yard of excavation actually accomplished in building the bridge. Excavation for all 34 piers will total an estimated 118,000 cu yd.

After all overburden was removed to rock, Pier 17 was built up to El +10, using grout-intruded concrete—an innovation in major bridge building—which was adopted for all substructures.

Piers 21 and 22 were also built inside of steel sheetpile cofferdams. Pier 21 consists of twin 50-ft circular shafts founded in rock at El −60. Piers 18, 19 and 20 are being constructed as concrete-filled caissons, using open-dredging for sinking.

• Deep caissons—There are many spectacular construction operations, but sinking the huge caissons for the main Piers 19 and 20 qualifies as one of the topmost feats in contemporary bridge work. They are founded in bedrock 195 ft and 190 ft, respectively, below water level. Between them will stretch the 3,800-ft suspension span.

Both tower caissons are circular, 116 ft in dia. Each contains about 2,530 tons of structural steel; 330 tons of which is in the cutting edge. Sinking them through about 95 ft of overburden requires 37,000 cu yd of excavation at each tower.

• Sinking technique—In horizontal section these two caissons are like Paul Bunyan's doughnuts. Exterior and interior circular shells are 15 ft apart, with the open space in the center serving as one huge dredging well, 86 ft in dia. The space between the two concentric shells, which tapers down to a thin cutting edge at the toe, is divided by radial diaphragms into eight watertight compartments.

Once exactly positioned above the pier site, a caisson is sunk to the bottom by flooding the compartments. When the top of the caisson nears water level, sinking is delayed until the walls of the caissons are built up with prefabricated panels.

This process is repeated until the cutting edge is firmly embedded in the bottom of the straits. Then, by progressively dredging, placing concrete in the compartments and building up the walls, the caisson is sunk into bedrock. The area within the cutting edge is dredged clean to rock. And finally the entire caisson, including both the 86-ft dia dredging well and the area between inner and outer shells, is progressively concreted to El −8.

The inner shell will then be cut off at El −8 and two 38-ft dia reinforced concrete pedestals built within the 116-ft dia to El +25, to carry the steel towers which will extend on up an additional 527 ft. The outer shell of the caisson will then be cut off at El −8.

TALL TUBULAR STEEL TOWERS, for guiding caissons of Piers 18, 19 and 20 during sinking, were fabricated at a St. Ignace dock. They were towed to the site, upended, sunk and pinned to the bed of the straits with long spuds driven through vertical and battered 20-in. pipe. Four towers made one "corral" for each caisson.

The third big caisson, for the south cable-crest Pier 18, is rectangular in shape. It is 92 ft long by 44 ft wide, and contains 21 dredging wells. They are 9 ft in dia, and arranged in three rows of seven each. This caisson rests on rock 130 ft below the surface.

The lower 48-ft sections of the tower piers were assembled at the Alpena (Mich.) shipyard of the Wiltse Brothers Corp., and towed to the site. The lower 48-ft section of the caisson for Pier 18 was fabricated and assembled at the Toledo (Ohio) yard of the American Shipbuilding Co., and towed to the site.

• **Caisson anchorages**—Positioning and sinking these gigantic caissons depended on a combination of several factors: careful engineering and surveying, proper fabrication and assembly, sufficient marine equipment of adequate size to handle the heavy components, and skilled operators and workmen to do the job.

But one of the real secrets of success was the type of anchorage furnished for the caissons. This assembly, positioning, sinking and pinning to the bottom of the straits was a remarkable feat in itself.

Basically, it is known as a "corral" system, consisting of four steel towers firmly positioned around the perimeter of each 116-ft dia caisson.

Each tower is made up of twelve 20-in. dia pipes, arranged in three rows of four each. Nine are vertical, spaced 13 ft c-c, each way, and the other three are battered to give additional stability to the towers. All 12 pipes are rigidly joined together with a network of welded horizontal and diagonal 6-in. pipe bracing.

The tower sections were assembled onshore, barged to the site and lowered into position on the bottom of the channel. Then they were pinned to the bottom with 12-in., 74-lb per ft, H-beam piles inserted through the 20-in. pipe and driven to refusal. The free space within the pipes around these H-piles, or spuds, was then filled with grout in order to give additional rigidity.

At each of the three caisson-built piers, three of the tower sections were installed by this method. The lower section of caisson, with cutting edge, was towed into position. The fourth tower was then lowered into position and all four towers joined together at their tops, about 10 ft above water, by horizontal box-type trusses. This closed, or completed, the corral. The tower assemblies were designed to furnish about 1-ft clearance around the periphery of the caisson.

The tremendous size of the steel towers increased the problems and hazards connected with their installation.

Pier 19 required the biggest towers. They were 157 ft tall, measuring 26 ft square at the top and 26x75 ft at the bottom. Each of the four towers contained about 160 tons of steel. And the four connecting trusses weighed 20 tons each, making a total of about 720 tons of steel required to hold the 116-ft dia caisson in position during sinking and filling with concrete.

Due to their unusual size, each of the four towers was placed in two full-height sections. One section, including the nine vertical pipes, was lowered in one unit; its corresponding section, containing the three battered pipes was then lowered as a separate unit, and the two units coupled together.

The 12 spud beams for each tower were too long to handle in the pile-driving leads in one length. Those in the battered pipe were 220 ft long. Consequently, they were assembled in two lengths and welded together before driving into the bed of the straits.

• **Substructure design** — Additional safety was incorporated in the design of both the substructure and superstructure, consistent with economy and conventional practice, according to D. B. Steinman, designer of the bridge. Allowable foundation pressures of 30,000 lb per sq ft were used. This gave a minimum factor of safety of four, since test borings indicated that the foundation material could carry at least 120,000 psf.

An ice pressure of 115,000 lb per lin ft of pier width was used. This represents a factor of safety of five, since the highest ice pressure ever recorded in the laboratory or field is 23,000 lb per lin ft. For circular surfaces an ice pressure of 65,000 lb per lin ft was used. The maximum observed current in the Straits was about 4 mph.

Design wind pressure was 50 lb per sq ft (corresponding to 120 mph) which gives a factor of safety of 2.5 over the highest wind observed in that area. The cable-anchorage piers were designed for a factor of safety of 5.5. They were designed to provide a resistance of 170,000 tons each, against the 30,000 ton maximum pull of the two bridge cables.

• **Superstructure design**—In a bridge the length of Mackinac, the question of how many traffic lanes to provide is an important one. In this case, four lanes will be provided; two on each side of a 2-ft wide low-type center mall or traffic barrier. This low-type mall has several advantages, according to the designers. It will induce vehicles to travel closer to it than a high mall, thus justifying a narrower traffic lane next to it. In the case of emergencies, vehicles can be detoured across it at any point under police control. And

(*Continued on page 42*)

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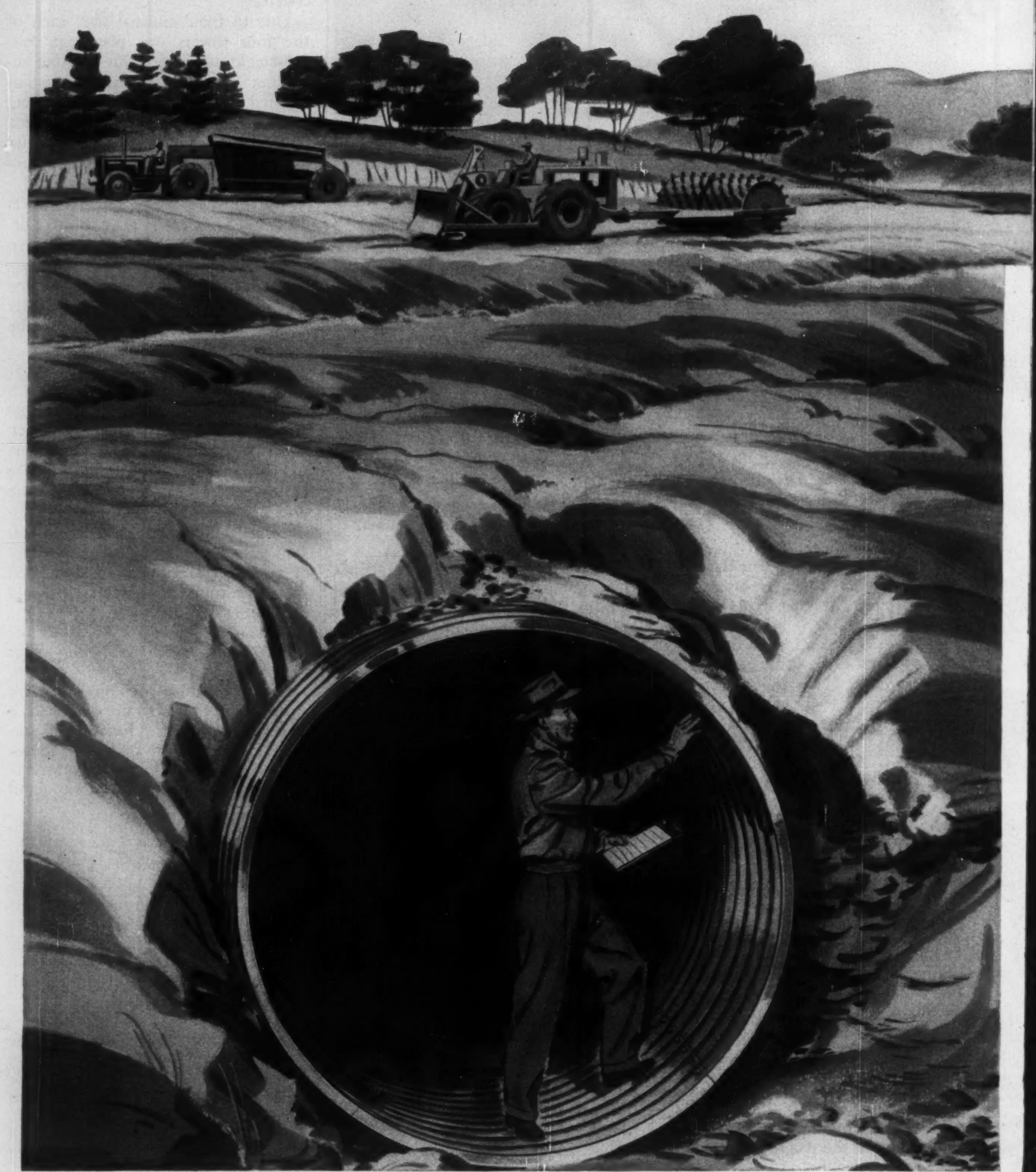

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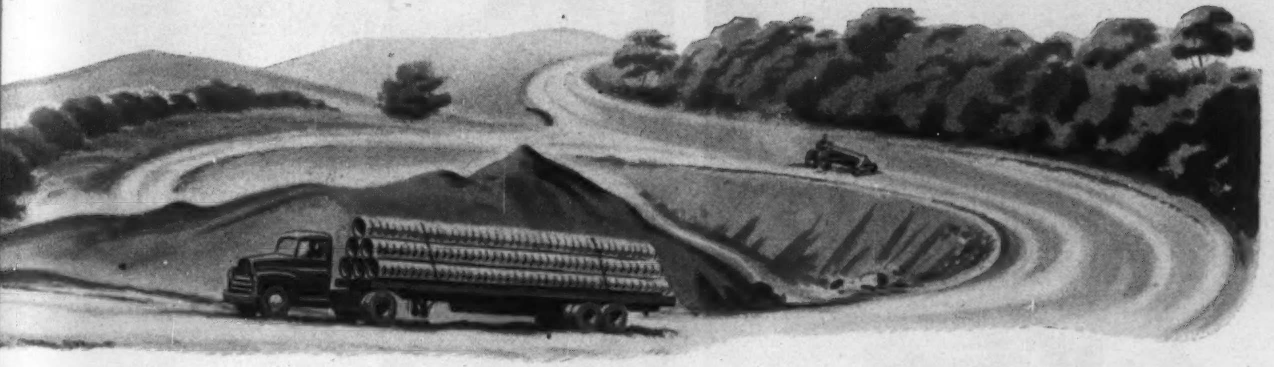

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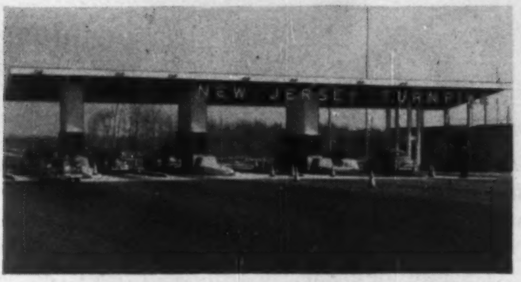

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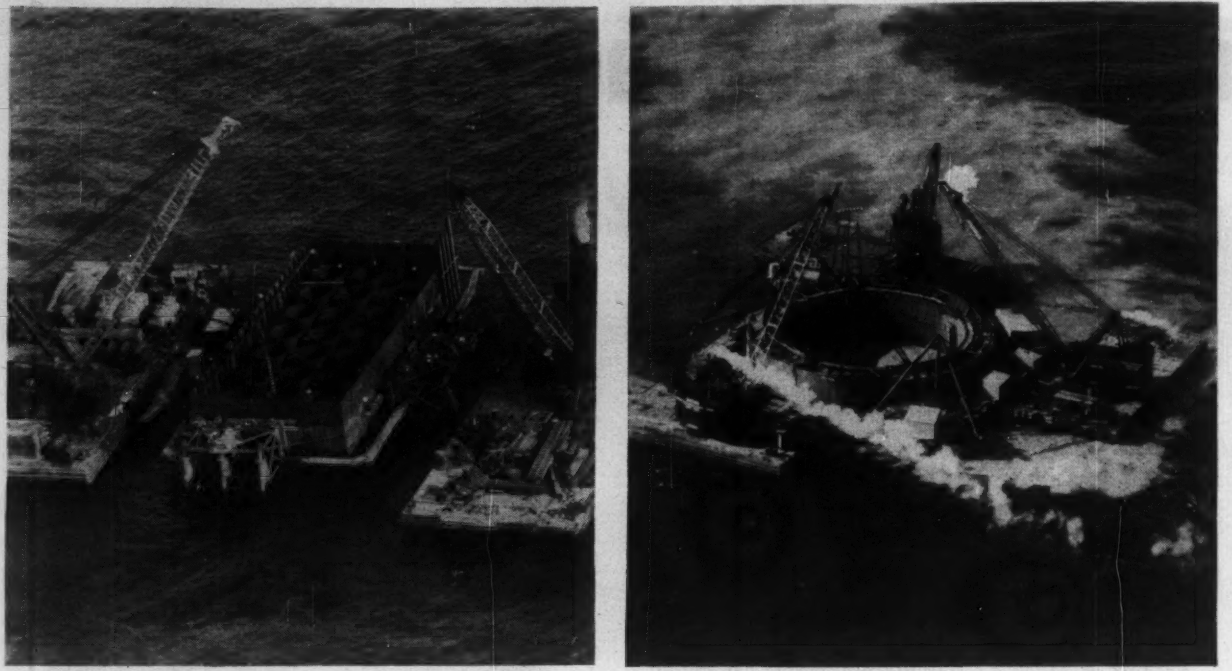


FIRMLY POSITIONED in their four-tower corrals, the 92x44-ft caisson for Pier 18 (at left) was sunk 130 ft to bedrock by open dredging through 21 wells, while the huge 116-ft dia caisson for Pier 20 (at right) will be sunk 195 ft to bedrock by open dredging through its 86-ft dia well. Drift of dredged muck toward upper left indicates the strong current at the site.

. . . Superstructure is stiffer

it permits more direct access by tow cars to vehicles requiring their services.

The roadway is 48 ft between curbs. The two outer lanes are 12 ft wide, and the inner lanes are 11 ft. No provisions are made for normal pedestrian traffic on the 4-mile long bridge, but 3-ft wide emergency walkways between the curbs and railing will serve maintenance and operating personnel; also in emergency cases for occupants of vehicles.

Design loading for the entire floor structure and the shorter main girders and trusses are the American Association of State Highway Officials' standard H20-S16-44 loadings. For the four-lane bridge design on the suspended portion, a live load of 2,000 lb per lin ft of bridge was adopted. This represents a line of heavy trucks about 50 ft apart on each of the four lanes—a loading which will probably never be reached in actual conditions.

• **Suspension span**—The main span had to jump a deep gorge under the main channel through the straits. This calls for a 3,800-ft span, with its main piers founded on rock about 200 ft below lake level. Side spans of 1,800 ft, with unloaded backstays of 470 ft are used. This permits the massive anchorages for the cables to be located on suitable rock foundations at moderate depths of 85 ft below lake level on the north side of the channel, and 88 ft on the south side.

Stiffening trusses are 38 ft deep, or 1/100 of the span. This is 68% greater than the depth-ratio of the Golden Gate Bridge.

The remainder of the crossing over the waterway between the south shore and the end of the mole at the north shore, will be a series of truss spans on concrete piers. Twenty spans over the deep portions of the waterway range in length from 560 ft to 330 ft. Four spans near each shore have lengths of 160 to 200 ft. Maximum roadway grade is 2.5%.

• **Flooring**—Three types of flooring will be used. On the suspension spans, the outer 12-ft lanes will be steel grid filled with lightweight concrete and topped with a layer of bituminous concrete. Most of the traffic will use these lanes. An open-grating flooring will be used on the inner 11-ft lanes, which will be used mainly during the peak-load hours. It will weigh about one-third as much as solid flooring.

Two cables each 24.25 in. in dia will carry the four-lane bridge. Each cable will be made up of 37 strands of 348 galvanized wires, making a total of 12,876 wires per cable. The wires will be 0.196 in. dia.

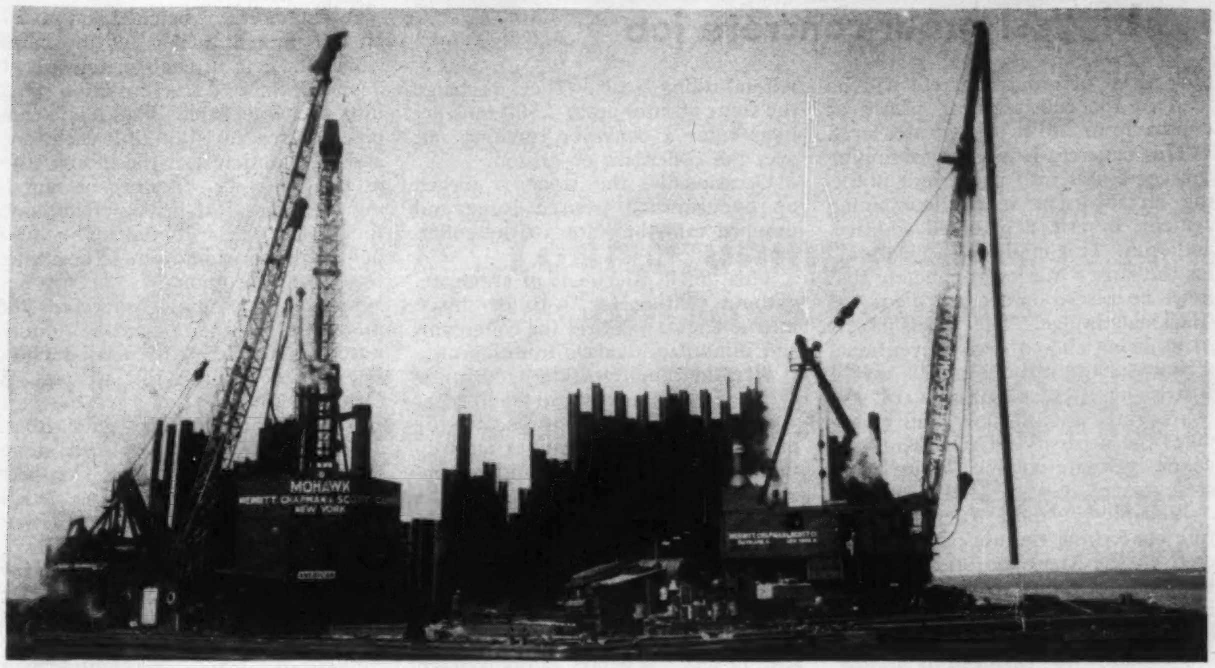
The cable sag of 350 ft, or about one-eleventh of the center span, is somewhat less than in some other suspension bridges. But this is conducive to gracefulness, contend the designers, and gives greater stiffness to the structure.

The steel towers rising to a height of 552 ft above water level, are of the conventional type with fixed bases. The tower shafts are of cellular construction. One shaft of each tower will contain a service elevator.

The suspenders, which will carry the load of the suspended structure to the cables are to be standard wire ropes, with independent wire rope centers, spaced 40 ft c-c. Each suspender will be composed of two parts of a 2¼-in. rope looped over and resting on a steel cable band clamped to the cable. The socketed ends of the 2¼-in. ropes are attached to the top chord of the stiffening trusses.

Transverse floor beams, which will carry the longitudinal stringers and floor, and transmit their load to the stiffening trusses, are designed as open trusses instead of the usual solid-web girders. This minimizes the wind pressure against them. Other factors that increase the aerodynamic stability of the structure—a prime consideration in the design—include:

Stiffening trusses 38-ft deep c-c of chords, equal to 1/100 of the span. Double lateral trusses are provided, one each in the planes of the top and bottom chords of the stiffening trusses. This substantially increases the torsional rigidity of the suspended structure, say the designers, as compared to that provided by a single



FOUR DERRICK BOATS teamed up to jet and drive long steel sheet piles encircling the 135x115-ft north anchorage (Pier 22), to insure its completion before the end of the 1954 construction season, clearing the way for superstructure work in 1955.

system which, until recently, has been conventional practice in large suspension bridges.

Cables and stiffening trusses are 68 ft c-c, compared to the 48-ft curb-to-curb width of the roadway. These open spaces between trusses and roadway together with the 24 ft of open grating flooring, and the open truss-type floor beam, all contribute to yield remarkably favorable aerodynamic characteristics representing assured aerodynamic stability.

• **Engineering reports**—The initial engineering report submitted by Steinman in February 1953 carried an estimated completion date (ready for traffic) of Nov. 1, 1956. This was predicated on construction getting under way early in 1953.

But that wasn't to be. Initial attempts of the Mackinac Bridge Authority to market the $99.8 million of bonds were unsuccessful. And they didn't get them sold until December, 1953. This meant that an entire construction season had been lost. In fact, Steinman in his amended engineering report to the authority on Dec. 9, 1953, extended the completion date one year, to Nov. 1, 1957.

Two contracts totaling $66 million for the substructure and steel superstructure were awarded in March of 1953 (ENR Mar. 12, 1953, p. 25). Merritt-Chapman & Scott Corp. of New York City, got the substructure contract for $24.5 million, while a $41.5 million contract for the steel superstructure was awarded to the American Bridge Division of the United States Steel Corp.

Both contracts were contingent upon the successful completion of the financing of the project. And when the 1953 construction season slipped away without the bonds being sold, negotiations had to be reopened with the two contracting companies.

• **Costs were increased**—The outcome of this renegotiation was that the Merritt-Chapman & Scott contract was upped to $25,735,000, and the steel superstructure contract held by American Bridge was increased to $44.5 million. This represents a total increased cost of $3,235,000.

Estimated costs of the various items comprising the completed project are shown in an accompanying table. It is to be noted that little more than $1 million for "contingencies" has been included in the total construction costs. Ordinarily this item is on the order of 10%, which in this case would be about $8 million.

• **Low contingency funds**—In their report to the authority, the consulting engineers express the conviction that the $1-million figure is adequate for contingencies "in view of the positive nature of the two principal contracts." They point out that the lump sum substructure contract is based on a firm bid by M-C&S, and that it is not subject to change on account of variations in foundation conditions, quantities, labor or material costs. Similarly, the steel superstructure contract held by American Bridge is a fixed unit price contract with no escalation clauses, and subject to no changes except for possible variation in steel quantities.

The authority plans on letting separate contracts in 1956 and 1957 for the construction of the concrete deck, approach roads and viaducts, an administration building, toll booths, and maintenance buildings and equipment. These will carry a completion date of Oct. 1, 1957.

Operating and maintenance expenses for the average year, according to the engineers' estimate, will be $392,000. Against this the Michigan state legislature has pledged an annual expenditure of $417,000 of state highway funds.

The draw-down of construction funds was estimated to be about $8 million for 1954; $23 million for 1955; $24 million for 1956; $17 million for 1957; and about $7.5 million during the first half of 1958. Target date for opening the bridge to traffic is Nov. 1, 1957. Actually, $12.5 million or 50% of the substructure contract was completed last year.

• **Grout concrete**—All concrete in the 34 piers will be made by the grout-intrusion method. This isn't a new or untried method. The Michigan State Highway Dept. and other agencies use it frequently for making concrete both under and above water. But seldom, if ever, has it been used on such a large scale. Roughly 440,-

(Continued on page 44)

. . . biggest grout-concrete job

000 cu yd of grout concrete will be used in the substructures, placed at depths up to 200 ft below water level.

This concrete is made by dumping the aggregates into place, and injecting an intrusion mortar containing cement, fly ash, a patented additive, and sand. This method is a "natural" for the large yardages of concrete that must be placed under water for the Mackinac bridge. The chief factors in its being chosen over conventional mixed and tremied concrete is that it speeds up the stabilization of the cofferdams and caissons and eliminates the necessity for rehandling the coarse-aggregate volume through concrete mixers.

Probably the most spectacular feature concerning the use of grout concrete in the Mackinac bridge piers is that 63% of the concrete is placed as inert coarse aggregate from supply boats and barges.

Generally, this aggregate is brought to the piers in 10,000- to 15,000-ton self-unloading boats. They discharge the stone at rates up to 2,500 tons per hour from a conveyor reaching out over the cofferdam or caisson.

Occasionally, the stone is picked up by clamshell from a barge and dropped into the water in the cofferdam.

This quick placement of aggregate, without waiting for it to be mixed into concrete, stabilizes the cofferdams and minimizes damage from storms.

Intrusion mortar, the remaining 37%, is easily mixed and pumped at a rate sufficient to consolidate the preplaced coarse aggregate at rates up to 200 cu yd per hour of finished concrete. The entire batching, mixing and pumping plant is mounted on a single 50x150-ft barge.

The portland cement and the fly ash are towed to the site in covered barges and air-pumped into hoppers of the batching plant. The sand arrives in separate barges and is handled by clamshell.

As the mortar is batched and mixed on the grout boat, it is fed to pumps which force it through a network of flexible hoses and steel injection pipes into the aggregate. These injection pipes are spaced 10 to 20 ft each way, and are withdrawn as the mortar rises in the aggregate. A series of sounding wells are installed to determine the height of the mortar. They also help maintain a uniform level during concreting operations.

Some rather impressive records for producing grouted concrete under water were made at the north anchorage (Pier 22), during the last week of October.

For five consecutive days (Oct. 24-28) the contractor placed more than 4,100 cu yd daily. The best single day's production was 5,040 cu yd in 24 hr and the record 8-hr shift was 1,800 cu yd.

During this shift the grout plant used about 13 carloads of sand, six carloads of cement, three carloads of fly ash, and about four tons of the additive to mix and pump more than 20,000 cu ft of intrusion mortar for solidifying the aggregate that had already been deposited in place.

• **Men in charge**—Grover C. Denny is project manager on the $25.7 million substructure contract of Merritt-Chapman and Scott Corp.; reporting to Charles A. Richardson, vice president and William Denny, executive vice president and general manager, New York City. B. F. Sanders and E. H. Bernard are assistant project managers, and C. E. Haltenhoff is project engineer.

J. W. Kinney is resident engineer for D. B. Steinman, consulting engineer, New York City, whose contract with the Mackinac Bridge Authority includes field engineering and inspection as well as design. W. G. Dallas and W. P. Frye are Kinney's assistants. Herbert Goodkind is project manager. Carl H. Gronquist and R. M. Boynton are in charge of superstructure and substructure design, respectively. Glenn B. Woodruff, of San Francisco, is special consultant to Steinman.

The Prepakt Concrete Co., Cleveland, Ohio, working with M-C&S on the concrete placement, is represented at the site by Mered McKinzie, project superintendent and R. E. Davis, Jr., resident engineer.

Prentis M. Brown is chairman of the Mackinac Bridge Authority. Charles T. Fisher, Jr. is vice chairman and Lawrence A. Rubin is secretary. The other members are Mead L. Bricker, Wm. J. Cochrane, George A. Osborn and Charles M. Ziegler, Michigan State Highway Commissioner.

Significant Events in the Mackinac Straits Crossing

1920—Horatio S. Earle, Michigan highway commissioner, suggested a submerged floating tunnel for the Mackinac Straits crossing.

1928—Bridge spanning the straits deemed feasible by the highway department, but subsequent depression put a stop to the project.

1934—Mackinac Straits Bridge Authority created by State Legislature. C. E. Fowler, chief engineer of the authority, developed a plan for the crossing.

1935—A second plan for crossing the straits was developed by F. C. McMath and J. E. Cissel, consulting engineer.

1938—Modjeski & Masters engaged to make a further study of the project. Report submitted in 1940 but World War II stopped all planning.

1950—Mackinac Bridge Authority created by Michigan State Legislature. Three consulting engineers, O. H. Ammann, D. B. Steinman & G. B. Woodruff, engaged to "determine whether a bridge can be safely and feasibly constructed across the Straits of Mackinac."

1951—The three-man board of consultants concluded: "Construction of the bridge is feasible; it should extend directly northward from Mackinac Point; and it can be completed ready for traffic within four years of the award of the first contract." Coverdale and Colpitts, consulting engineers, engaged to make a traffic analysis and assist in an economic study.

1953—D. B. Steinman retained to design and supervise construction of the bridge. Glenn B. Woodruff engaged by Steinman as consultant.

January: Investment interests showed an interest in financing the multi-million dollar project.

March: Substructure and superstructure contracts awarded on the contingency that the bonds could be sold.

April: Unable to sell bonds.

June: Plans for selling the bonds virtually abandoned. Contracts to be reopened and financing plans revised.

December: Investment bankers purchased the $99.8 million of bonds to finance the project, at interest rates of 4% for $80 million of first-lien bonds and 5¼% for $19.8 million of second-lien bonds.

1954—First cubic yard of "pay excavation" removed on July 24—for Pier 17.

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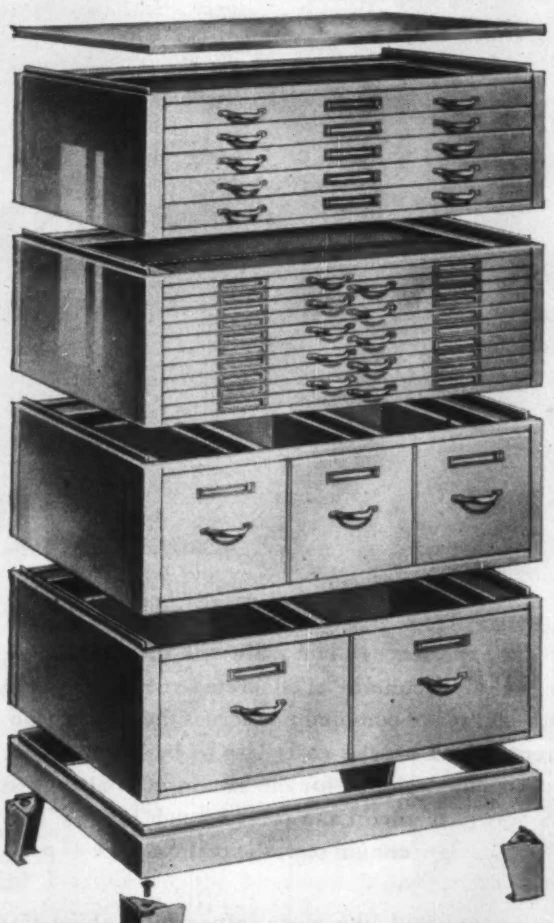

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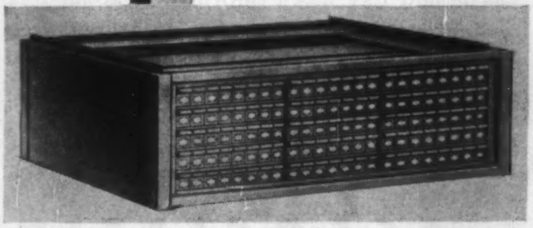

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In Janesville, Wisconsin

maintenance costs are lowest on

CONCRETE STREETS

ACCORDING TO LATEST available figures. covering 15 consecutive years, it costs only $55.90 per mile per year to maintain the concrete streets in Janesville, Wisconsin. The average annual maintenance cost per mile for the three other types of pavement ranged from $137.45 to $294.89—2½ to 5¼ times as much as concrete pavements!

Reports City Manager Warren C. Hyde, "The low cost of maintaining our concrete streets is especially significant because most of the heavy local and arterial traffic travels over our concrete streets. Concrete streets in the residential sections laid 25 years ago show but little wear, are easily cleaned and have proven very satisfactory indeed."

The experience of Janesville with the outstanding service and economy of concrete streets is repeated in hundreds of communities across the nation. Concrete, which usually costs less to build than other pavements designed for the same traffic, also costs far less to maintain and it lasts much longer. That results in **low annual cost,** the real measure of pavement economy.

If you would like more information about this **low-annual-cost** pavement, write for helpful free booklet, "*The Design of Concrete Pavements for City Streets.*" Distributed only in the U. S. and Canada.

●

Upper photo: recent view of Milton Avenue, part of State Route 26, built in 1924. Lower photo: same street in 1926.

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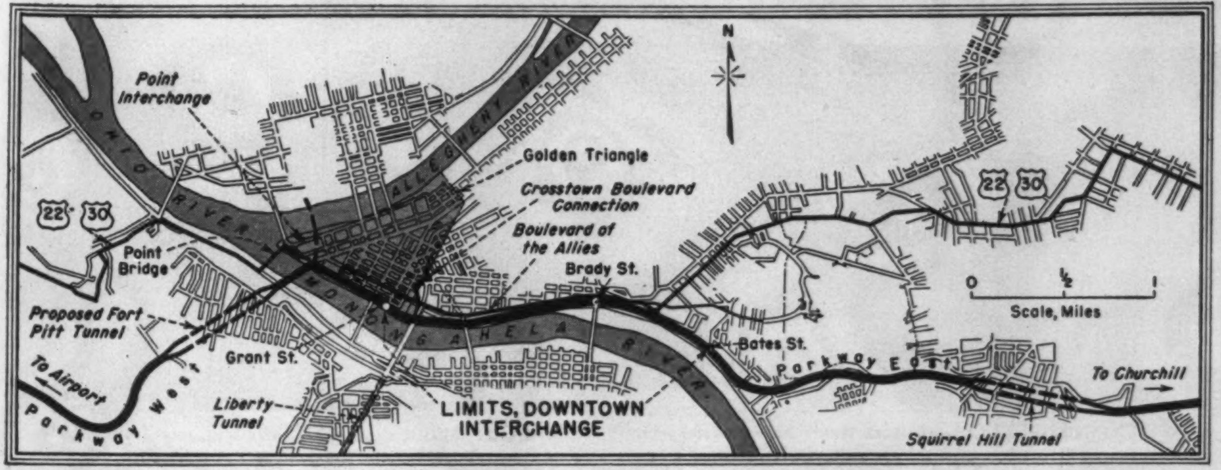


ACTIVE ZONE of Penn-Lincoln Parkway construction is the Downtown Interchange, which is much more than an interchange in the usual sense—just as the parkway is more than a parkway, inasmuch as it will carry both passenger and commercial traffic.

A 20-mile by-pass . . .

Downtown Roadbuilding is the Toughest

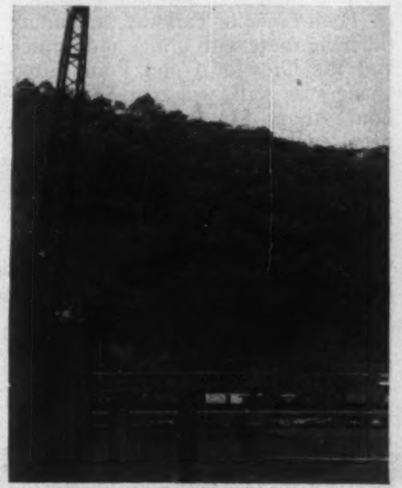
At Pittsburgh, Penn-Lincoln Parkway is both a busy thoroughfare and an active strip of construction—with more to come before a motorist can drive its full 20 mi from suburban Churchill, on the east, to a point 10 mi west of the Golden Triangle.

There, amid rolling rural hills, the parkway feeds four-mi Airport Boulevard, making Greater Pittsburgh Airport one of the nation's most accessible; the new parkway also interchanges at this western terminus with U.S. 22 and U.S. 30—respectively the William Penn and the Lincoln highways. Penn-Lincoln Parkway takes its name from these two venerable east-west routes, and eventually it will fully by-pass them as they twist and turn through the traffic congestion of the hilly city. Despite the term, "parkway", the new route will carry both passenger cars and trucks.

Penn-Lincoln's extremities were put into full use in 1953. Parkway East is seven mi long, including 4,225-ft Squirrel Hill Tunnel; it terminates at Bates St., about three mi short of The Point, where the Monongahela and Allegheny Rivers join to become the Ohio River. Parkway West picks up at Saw Mill Run, which is separated from The Point by the Monongahela River and its left-bank bluff.

• Point Bridge replaced—The closing section now under construction and planned for the future, then, extends from Bates St. to Saw Mill Run, and includes the Downtown Interchange, a piece of Point Interchange, Fort Pitt Bridge (across the Monongahela at The Point), and 3,600-ft Fort Pitt Tunnel (through the bluff). Design for the tunnel, estimated at $19 million, is under way, with completion expected in 1958. Foundations for the bridge are nearing completion. The bridge, which will replace famous Point Bridge, will cost $9.8 million and is expected to be ready for traffic in 1957. It will be a double-deck structure with four lanes on each level.

Closer to completion is the Downtown Interchange. The name of this 2½-mi route along the Monongahela's right bank is deceptive, because it actually includes three zones of interchange with local street traffic: at the termini, Bates St. and Grant St., and at an intermediate point, Brady St. Total cost will be $21 million. The most complicated of these interchange zones is Brady St. A cross-section here shows eight separate roadways supported on structure. Three existing streets have been revamped, parkway connections being provided to two of the streets.

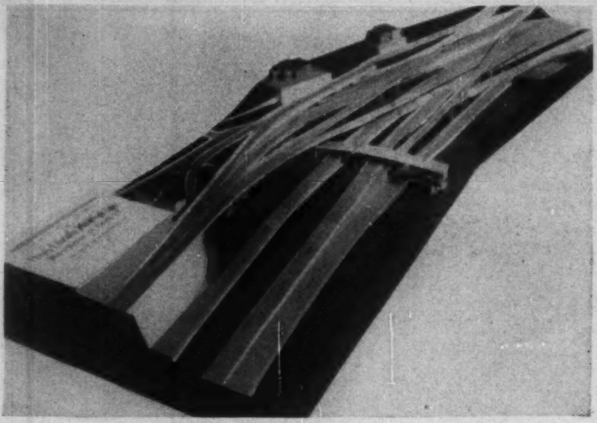


TUNNEL SITE—View from Point Park looks beyond Fort Pitt Bridge work to left-bank bluff to be pierced by tunnel.

One of the connecting streets at Brady St. is Boulevard of the Allies, an arterial that was hailed in the 'Twenties as a solution to Pittsburgh's growing traffic pains. One of the functions of Downtown Interchange will be to remove today's traffic pressure from Boulevard of the Allies, which runs for much of its length along the top of the Monongahela bluff. This location was costly by the standards of a quarter century ago, involving some cantilevered terrace construction, heavy cuts and retaining walls, and major viaducts. But it avoided expensive right-of-way and railroad relocation problems that would have been encountered in the narrow flood plain at the foot of the bluff.

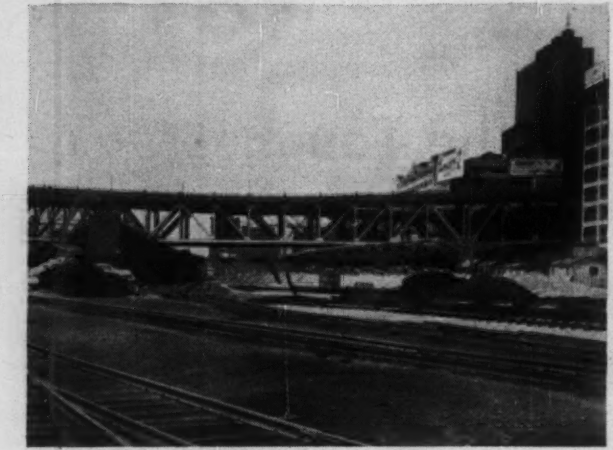
• The leavings—These problems awaited the Penn-Lincoln Parkway builders, who had to use the flood-plain location for the western half of the Downtown Interchange. Space was made for part of the new route by filling out into the river and building a river wall. More space was made by condemning commercial property on the side of the plain away from the river. Railroad yard trackage then was relocated to the condemned areas, leaving riverfront room for the parkway. The rail relocations include new freight transfer sheds (now complete) and, at the lower end of the Downtown Interchange, a passenger station for the Baltimore and Ohio Railroad.

Keeping the railroad in operation



MOST COMPLICATED work is at Brady St. (model), where cross-section will intercept eight roadways on structures.

LANDFILL downstream along Monongahela from Brady St. carries part of parkway at the foot of the river bluff.



RAIL YARD is moved inland (new tracks and ballast at right) to make room for parkway along riverfront.

POINT BRIDGE (background) will be removed when Fort Pitt Bridge (foundations, foreground) begins to carry traffic.

has imposed stage construction in this area, making it the bottleneck in Downtown Interchange progress. The passenger station, when built this year, will replace an old facility at the riverfront, where the principal interchange zone for downtown Pittsburgh will be developed. At this point the parkway's main stem will tie in with a short piece of existing divided roadway leading to Point Park.

In Point Park will be built $10.5 million Point Interchange, which partly affects Penn-Lincoln Parkway because it includes approach ramps for Fort Pitt Bridge. Now under contract in the bridge-approach area, this interchange eventually will cross the park to the Allegheny River side, connecting with local streets as well as with Duquesne Way, on the Allegheny riverfront. It also would provide approaches to a proposed Fort Duquesne Bridge crossing the Allegheny.

One other unit, not yet under contract, is considered a part of the Penn-Lincoln System. This is the $4 million Crosstown Boulevard Connection. Located inland from the Downtown Interchange, near the base of the Golden Triangle, it will distribute to local streets, traffic from Liberty Bridge (crossing the Monongahela) and from Boulevard of the Allies (which will get part of its traffic from Penn-Lincoln).

Altogether, the downtown portion of Penn-Lincoln Parkway, including the main route with bridge and tunnel, and the Crosstown and Point interchanges as well, will cost $81.6 million. About $11 million worth has been completed or put under contract.

In addition, Parkway West cost $22 million and Parkway East cost $46 million, bringing the estimated total when the whole system is completed in 1959 to $150 million. Initial construction, on Parkway East, began in 1948, after 20 years of discussion and planning.

• **Management**—Funds for the most part have come from federal aid, state appropriations and Pennsylvania Highway and Bridge Authority bonds. On Parkway East the City of Pittsburgh made a contribution of $1 million, and Allegheny County put up $5 million. Administration of contracts is by the Pennsylvania State Highway Department, except for railroad trackwork and station facilities. These items are being handled by the Baltimore and Ohio Railroad, which is using $4.4 million of project money for force-account and contract work. L. J. Curran is District Engineer in Pittsburgh for Pennsylvania State Highway Department.

Design has been handled by three Pennsylvania consulting engineering firms: Michael Baker, Jr., Rochester; George S. Richardson, Pittsburgh; and Gannett, Fleming, Corddry & Carpenter, Harrisburg.

Fourteen contracts will complete the Downtown Interchange. Six are under way or complete. Indicating the ability of local contractors to handle work of just about any magnitude is the fact that of 25 contracts to date on Penn-Lincoln, 16 were let to contractors from Pittsburgh. To the whole parkway's 20 miles must be added 18.5 mi of ramps in order to get a better picture of the amount of road construction involved.

Three 4-man crews, each with a "125" compressor and two heavy breakers, formed fast-moving team.

How to break concrete in a hurry

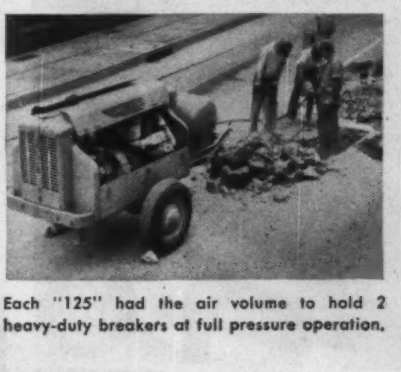
Jaeger "125's" with 6 breakers hit top speed on U. S. Route 30

The common problem of resurfacing a heavily-traveled thoroughfare with minimum traffic delay was encountered on a section of the four-lane Lincoln Highway, Route 30, east of Pittsburgh. The first step entailed cutting out all manholes, catch basins and other utility structures and replacing with new concrete, prior to resurfacing.

To speed the work, Wilkins Construction Company used three Jaeger 125 Air-Plus Compressors behind six heavy-duty concrete breakers. The 125 cfm volume of these "new standard" compressors provided the air needed to run all six breakers at full pressure and efficiency. Each tool hit 1500 to 1600 blows a minute with an impact of 55 to 60 foot pounds, *breaking concrete up to 40% faster than had 105 ft. compressors been used.*

The Jaeger 125 is the most efficient general purpose compressor you can buy. It is built with micro-precision and engineered to produce full 125 cfm at 100 psi without racing, overheating, vibration.

The Jaeger Model 75 has the capacity to operate efficiently one heavy-duty or two light-duty breakers, which 60 ft. compressors cannot do. It has all the features of larger Jaeger compressors and provides portable power to do hundreds of small jobs at lower cost.



Each "125" had the air volume to hold 2 heavy-duty breakers at full pressure operation.

Jaeger Standards:	**75**	**125**	**185**	**250**	**365**	**600**
Old Standards:	60	105	160	210	315	500

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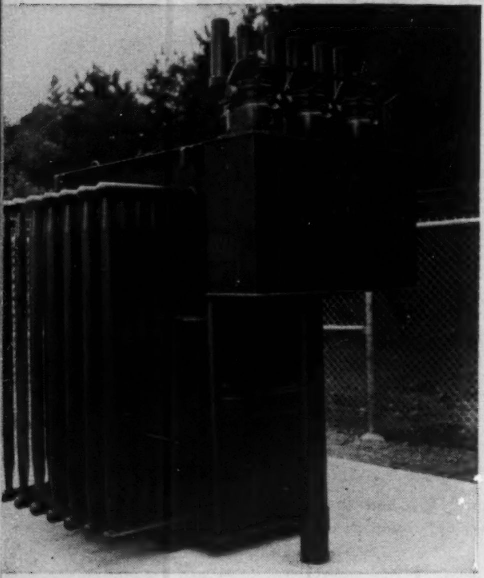
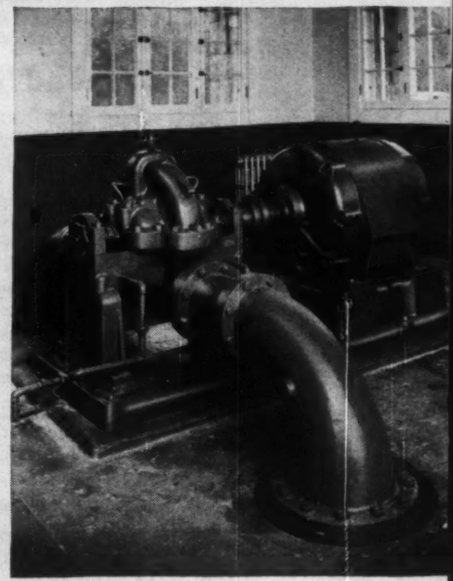


FACT: Reliable electrical link between utility and station is provided by a Westinghouse outdoor power center (4160/480 volts). Power is fed underground to control center in the station.

FACT: Centralized operation of the entire station is assured by this Westinghouse control center. Right cubicle was supplied empty to provide space for pressure gauges and flow meters.



FACT: This Westinghouse 200-hp, 1800-rpm, drip-proof motor drives main pump at a rate of 3400 gallons per minute. Installation also includes 75-hp auxiliary motor and pump.

FACT:

One 200-hp Westinghouse motor pumps 4,500,000 gallons a day

Operating simplicity is a keynote of Babson Pumping Station, erected recently at Gloucester, Massachusetts

FACT: This pumping station has been engineered so that a single pump, driven by a 200-hp Westinghouse Life-Line® motor, handles the entire station water supply—rated at 4,500,000 gallons a day.

FACT: Operating simplicity is further carried out with a Westinghouse control center. In a single enclosure, it groups controls for the main pump and stand-by motor, main controls for lighting circuits, and primary circuit controls that are interlocked with a Westinghouse outdoor power center.

For details on this case history and the Westinghouse team that helped coordinate it electrically . . .

J-94027

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HIGH SPEED CONCRETE FORMING

Form and Pour 75 ft. diameter tank 26 ft. high in 8 hours!

9:30 am POURING started at 8:00 am. Here is 6 ft of concrete in place.

How a contractor formed and poured a circular tank 75 ft. in diameter with walls 26 ft. high and 14 inches thick in 8 hours, with maximum economy makes the concrete forming speed story of the year.

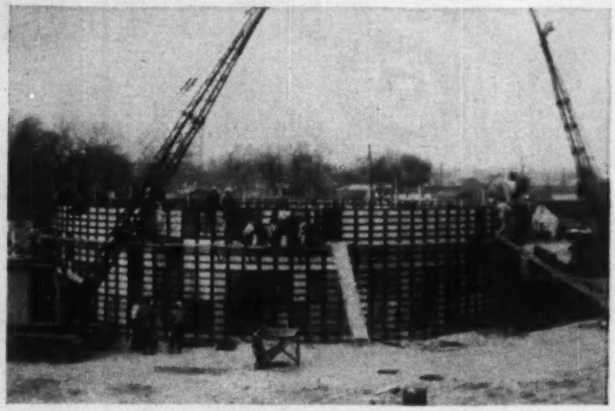
The tank was formed and poured by the contractor, C. H. Leavell & Co., El Paso, Texas, in record time, and a tough forming specification limiting maximum free drop of concrete to 4 ft. was rigidly adhered to.

11:30 am FORMING AND POURING were in full production at the 10-ft level.

UNI-FORM Concrete Forms — the prefabricated, ready to use form panels — were used on the job. Because UNI-FORMS erect into a tight, rigid, automatically accurate form requiring alignment and bracing on 1 side only, the contractor conceived the idea of simultaneously forming and pouring the wall. Universal Form Clamp Co. engineers on the job agreed that the plan was feasible.

4:00 pm POURING at 22-ft level. Scaffold setters on final placement.

Rigidity of the steel-framed, plywood faced UNI-FORMS permitted fast, non-stop erection of the entire inside form. This permitted setting of reinforcing steel, outside forming, and concrete placement to proceed with maximum efficiency, speed and safety. The outside of the tank was formed using 5 lifts of 4 ft. and 2 lifts of 3 ft. UNI-FORM Panels. In this way, the concrete never dropped more than the specified 4 ft. below the height of the outside form.



4:45 pm UNI-FORMS now completed.

As successive pours were completed, the outside form was closed by setting the UNI-FORM Panels in place and locking them to the projecting UNI-FORM Ties. UNI-FORM Circular Wall Fillers, which member with UNI-FORM Panels, permitted forming the curve of the wall to specifications. Automatically accurate wall widths were insured, as the UNI-FORM Ties spread and locked the face of the Panels exactly 14" apart. UNI-FORM Scaffold Brackets, which fasten directly to the steel UNI-FORM frame, provided fast, low cost scaffolding.

5:15 pm Final concrete poured.

The result? Under the capable direction of job superintendent Paul Nigh and project manager N. J. Riebe — fast, low cost forming and pouring — an accurate, smooth faced wall with true curvature.

UNI-FORM Panels are versatile, high speed forming tools. They're used by the country's most successful contractors to form every conceivable type of construction. They are rented or sold . . . or rented with purchase option. Universal Distributors and Branches are located from Coast-to-coast. Write for UNI-FORM Catalog and complete details on UNI-FORMING — the *modern* way to form concrete.

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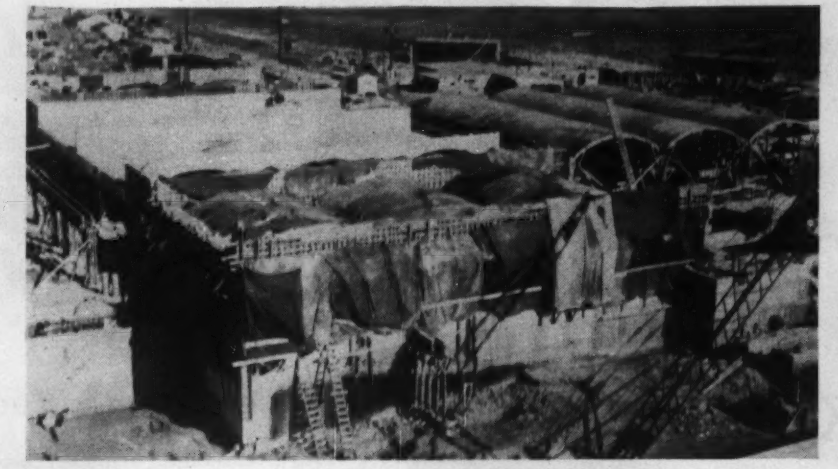
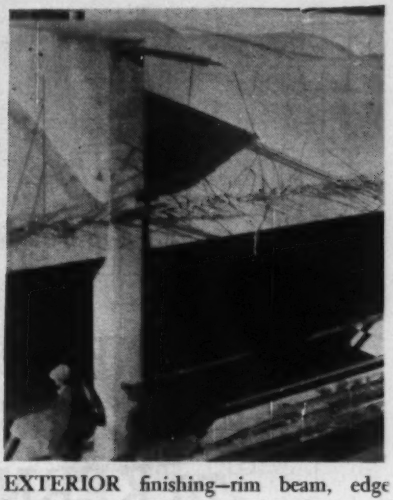
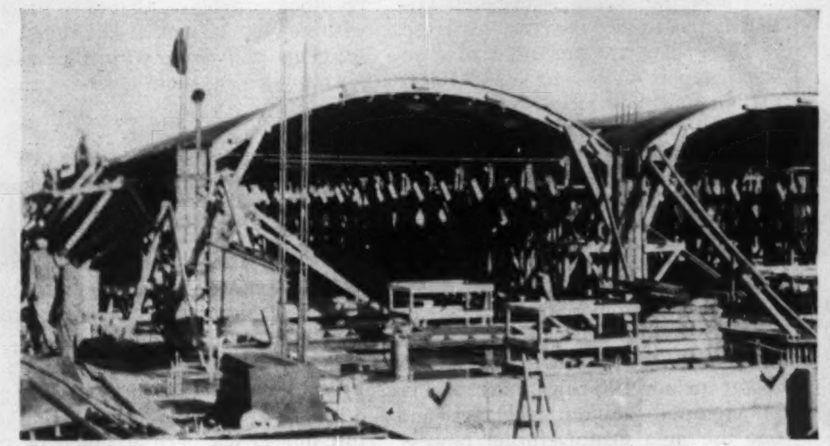


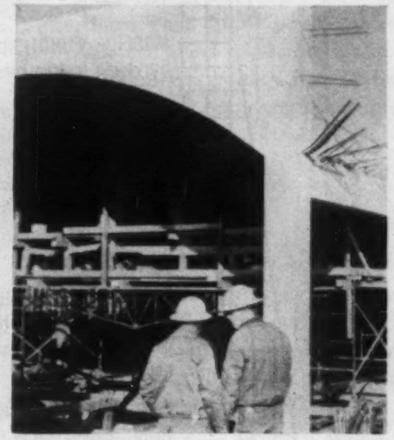
THREE STAGES OF ARCH CONSTRUCTION: completed arches in left background, covered arches in foreground and laminated forms in place at right.



EXTERIOR finishing—rim beam, edge beam and column construction shown.



FORMS ROLL INTO POSITION for placing of concrete in thin-shell arches.



INTERIOR—done from staging on rollers.

Multiple Thin-shell Concrete Arches Roof 48 Filter Beds in Pumping Plant

During the time when war in Korea was imminent, the Department of Water Supply of Detroit, Mich., was faced with deciding what method to use in roofing over 48 filter beds to be constructed at the city's new Northeast Pumping Station.

(The $40-million station will receive and treat water conveyed from the Belle Isle intake in the Detroit River through a water supply tunnel now in the driving.)

• **War rules out steel**—Anticipating a steel shortage, department engineers decided that thin-shell concrete arches represented the most practical solution to the problem, so multiple arches were designed into the filter house—48 to cover the filter beds and eight additional to cover part of three cross galleries.

The 56 arches, according to Frederick W. Neu, project manager for Grove, Shepherd, Wilson & Kruge, Inc., of New York, contractors on the job, represent "probably the largest application of the thin-shell principle in multiple usage in the U. S."

He says that there is no particular economic advantage inherent in this roof structure, but it does permit large unobstructed areas.

GSW&K is pouring the arches in multiples of three. Each arch is 28 ft wide and 49 ft long. Minimum thickness of each at the crown is three inches. At the valleys—about three feet from the juncture point with the edge beams—the arch thickness undergoes smooth transition to 6½ inches. This transition provides a gutter effect between arch members and helps counterbalance the weight.

Stresses are distributed continuously in all directions within the shell through a reinforcing pattern installed in four layers. The first layer is transverse, the second is axial, the third is diagonal and the fourth is an alternate transverse system.

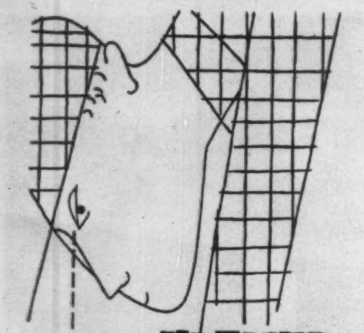
Rim beams at either end of each bay—at 49-ft intervals—support the forces on a radial basis. Corner columns supporting the arches and rim beams are reinforced concrete 16 in. by 18 in. in section.

• **Traveling formwork**—When a shell is to be placed, a traveling form is rolled into position over the filter bed on casters. It is jacked into position on screw jacks, then edge beams are formed and reinforcing steel is tied. The rim beam form is then installed and its steel placed.

After placing of concrete, flexible plastic sheeting is spread over the archwork. One inch of balsam wool is then applied and the entire section is covered with tarpaulins. Heat is provided as required with bottled gas burning in salamanders.

After curing, rim beam forms are removed, followed by removal of edge beam forms. Screw jacks are then calibrated for vertical travel and the entire form is lowered simultaneously at a pre-determined rate. For this purpose, each arch is hypothetically divided into one-third zones. The jacks under the center zone are low-

(Continued on page 54)



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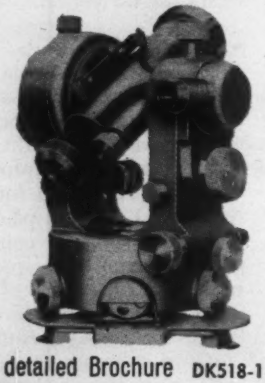

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ered at twice the rate of the jacks on the end zones. The support is removed gradually, permitting the barrel shell to start functioning as an arch in gradual steps.

Protective covering is removed on the 12th day after placing of concrete.

When the traveling formwork is completely lowered, it is rolled out for succeeding usage. Each form is used four times—the traveling member is 12 ft-6 in. long.

The form itself was prefabricated by Timber Structures Co., a West Coast firm. They are glued and laminated arch rims with tie rods.

• **Completion nears**—Opening day for the system has been set for June 1, 1955, when at least 24 of the 48 filter beds will be in operating condition. Filter capacity has been set at 200 mgd. Settling tanks have a 300-mg capacity, the filtered water reservoir is 30 mg and under the filter beds is a 6-mg filtered storage reservoir. Pumping capacity of the system will be 300 mgd.

California Waste Water Use Summarized

There are 229 instances in California where waste water is put to use, and California has more than 1,000,000 acre-ft of waste water each year that is potentially available for reuse.

These data are presented in a research report on Waste Water Reclamation and Utilization prepared for the California State Water Pollution Control Board by the University of California, Los Angeles.

Additional research on the same subject as well as on other phases of water pollution work is being carried out for the board with part of the funds coming from a $60,000 grant by the 1954 California legislature.

The 229 uses listed in the UCLA report include 106 irrigation uses, 112 underground aquifer recharges and one use in a manufacturing process. Conclusions on physical characteristics of waste water utilization include:

The distance which contamination and pollution travel through soils appears to be a function of the percolation rate.

Percolation rates are a function of hydraulic head, viscosity of the liquid and permeability of the soil layers.

In spreading of domestic sewage, evaporation and transpiration losses can account for changes in mineral concentration of the percolated water, except for ammonia, nitrites, nitrates, and phosphates, which are probably changed by biological activity.

Primary sewage treatment effluents spread on crops or land appear to produce high initial coliform bacteria counts in surface soil and on foliage wet with the effluent.

A new $25,000 research program on waste water reclamation is being carried out by the University of Southern California. This is intended to bridge the sewage reclamation gap between theory and application. The California Water Pollution Control Board believes basic data are now available on such things as underground travel of pollutants and well recharging—much of the data being provided by the UCLA report. Now they want USC to give technical help to agencies utilizing wastes to see what problems develop. An example is found in a proposed golf course that is to irrigate with sewage effluent. The USC researchers will work with the course operators giving them technical aid in establishing results.

• **Submarine outfalls**—Another new research, to cost some $4,500 is primarily a planning study for further research on submarine outfalls. The researcher, Erman A. Pearson of Berkeley, will summarize available literature, evaluate technical and practical problems involved in outfall disposal.

• **Water quality criteria**—A lengthy addendum to the 1952 publication on this subject has been accepted by the board. It will be available from the California State printer soon.

Prepared by Prof. J. E. McKee of California Institute of Technology, the report covers more than 250 mimeographed pages. More than half of this is additional listing of pollutants and their effects on beneficial uses of receiving waters. And most of this concerns effects on fish and other aquatic life. Also included is a survey of all states and pollution control agencies listing changes in regulations or operations since the earlier report.

• **Algae in oxidation ponds**—A research report was received from the University of California Department of Botany on algal growth in sewage oxidation ponds. This study revealed that the unicellar green algae chlorella and scenedesmus are the photosynthesis organisms most important for the ponding process. The report outlines further research to be accomplished that will lead to design and operation data for oxidation ponds.

Copies of the algal growth research as well as the UCLA waste water research are available for limited free distribution from the State Water Pollution Control Board, Room 610, 721 Capitol Ave, Sacramento 14, Calif.

DELIVERING WATER CHEAPER

DENVER, COLO.

As part of its Ranch Creek water collection system, the Denver Water Board laid 5,650′ of 30″ Dresser-Coupled steel pipe through rough, mountainous country. Both horizontal and vertical bends were encountered.

AURORA, COLO.

(Below) The City of Aurora tied into the Denver water system with a 12,978′ steel pressure main. Using Dresser Couplings, the contractor laid as many as 20 lengths of 36″ pipe in a 5-hour period.

Two Problems...One Answer

IN ROUGH OR EASY GOING

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Adaptable to virtually *any* job conditions . . , that's one important reason why Water Board engineers are specifying steel water pipe joined with Dresser Couplings.

In addition, they are finding this modern "packaged pipe line" is easier to lay out, easier to install, more accurately predictable as to cost.

And costs are invariably lower because lighter weight steel pipe reduces installation time. Long, strong pipe lengths require fewer joints. Flexible rubber gaskets in Dresser Couplings permit the laying of curves with a minimum of shop-fabricated specials. Bottle-tight sealing makes leakage allowance for joints unnecessary.

Over and above these many advantages, Dresser-Coupled steel water lines are glass-smooth inside, sustain high carrying capacity. Virtually maintenance-free, they are today's most dependable way to *deliver water cheaper*.

✓ ***BE SURE*** **you get the best line at the best price. Always put steel pipe and Dresser Couplings in your specifications.**

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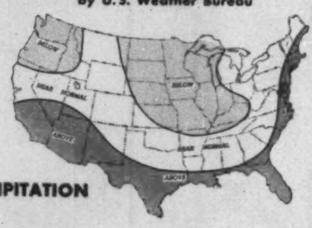
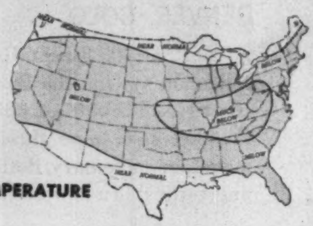
30-DAY WEATHER OUTLOOK

Mid-January to mid-February

by U.S. Weather Bureau



PRECIPITATION



TEMPERATURE

Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
	Dec. 1954	Departure fr. normal	12 mos. 1954	Departure fr. normal	Mean Dec. '54	Departure fr. normal	Av. daily maximum	Av. daily minimum
Atlanta	3.00	−1.55	31.80	−17.36	43.7	−1.5	52.4	35.0
Baltimore	2.87	−0.08	26.22	−14.45	37.6	−1.2	44.3	30.9
Birmingham	5.78	+0.53	40.66	−12.86	43.8	−1.9	54.7	32.9
Boston	5.40	+2.03	62.32	+23.56	34.4	+1.6	41.2	27.5
Chicago	1.79	−0.16	45.92	+13.20	31.9	+3.9	36.8	26.9
Cincinnati	2.71	−0.13	37.30	−1.99	34.8	−0.2	40.9	28.6
Cleveland	2.33	+0.04	39.65	+7.57	32.1	+1.0	37.7	26.4
Dallas	0.88	−1.74	26.43	−7.99	50.0	+1.7	62.1	37.8
Denver	0.59	+0.09	6.27	−7.16	38.1	+4.0	50.1	26.1
Detroit	1.72	−0.48	33.50	+2.46	29.7	+0.2	34.7	24.6
Kansas City	0.67	−0.83	27.52	−7.79	36.9	+3.2	42.2	28.5
Los Angeles	0.86	−2.25	13.69	−0.85	58.1	+0.8	67.4	47.7
Minneapolis	0.33	−0.52	23.68	−1.03	23.4	+4.0	29.3	17.5
New Orleans	5.88	+1.30	49.91	−13.63	56.5	−0.6	64.8	48.1
New York	3.93	+0.86	38.09	−3.94	35.8	+0.1	41.7	29.9
Philadelphia	2.83	+0.06	36.94	−4.50	37.2	−0.2	43.0	31.3
Pittsburgh	2.69	+0.12	39.52	+1.81	34.1	−1.1	40.2	27.9
St. Louis	2.27	−0.50	30.00	−7.86	37.4	+1.2	43.5	31.2
San Francisco	5.67	+1.60	17.85	−0.66	49.9	−2.0	54.4	45.4
Seattle	4.46	−0.88	38.19	+6.27	43.9	+0.8	48.0	39.8

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.
Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	Jan.	Mid Jan.-Mid Feb.	Feb.	Mid Feb.-Mid Mar.	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May	May	Mid May-Mid June	June	Mid June-Mid July	July	Mid July-Mid Aug.
Atlanta	3.39/5.33	3.38/5.50	3.36/5.67	3.40/6.00	3.43/6.33	3.12/5.72	2.82/5.10	2.48/4.72	2.14/4.33	2.50/4.38	2.87/4.43	2.93/4.62	2.99/4.80	2.89/4.90
Baltimore	2.77/3.96	2.57/3.68	2.36/3.39	2.48/3.76	2.59/4.13	2.59/4.17	2.58/4.20	2.76/4.30	2.94/4.40	2.73/4.42	2.52/4.44	2.57/4.71	2.61/4.98	2.91/5.32
Birmingham	3.75/5.40	3.61/5.64	3.47/5.88	4.18/6.26	4.48/6.63	3.91/5.85	2.94/5.07	3.05/4.81	3.16/4.55	2.90/4.70	2.64/4.84	3.29/5.18	3.94/5.53	3.44/5.39
Boston	2.77/4.05	2.70/3.99	2.64/3.93	2.79/4.22	2.94/4.50	2.66/4.45	2.39/4.40	2.58/4.29	2.39/3.50	2.42/3.84	2.09/3.50	2.35/3.76	2.61/4.02	2.60/4.36
Chicago	1.29/2.10	1.40/2.16	1.52/2.23	1.76/2.67	1.99/3.11	2.09/3.12	2.19/3.13	2.24/3.56	2.16/4.00	2.29/3.83	2.42/3.67	2.46/3.66	2.49/3.65	2.31/3.65
Cincinnati	2.34/3.80	2.07/3.40	1.80/3.00	2.10/3.64	2.39/4.29	2.66/3.94	2.34/3.60	2.42/3.85	2.49/4.10	2.59/4.30	2.69/4.50	2.54/4.10	2.39/3.70	2.32/3.95
Cleveland	1.59/2.60	1.55/2.52	1.51/2.43	1.81/2.71	2.10/2.98	2.15/3.13	2.20/3.27	2.27/3.38	2.33/3.49	2.17/3.53	2.00/3.56	2.24/3.82	2.47/4.08	2.15/3.84
Dallas	1.39/3.10	1.49/2.70	1.59/2.30	1.96/3.08	2.34/3.86	2.50/4.68	2.66/5.50	2.82/5.38	2.99/5.25	2.39/4.85	1.79/4.45	1.59/3.72	1.39/3.00	1.30/2.89
Denver	0.18/0.50	0.26/0.54	0.34/0.58	0.46/0.84	0.59/1.10	0.96/1.75	1.34/2.40	1.48/2.65	1.62/2.90	0.64/2.32	0.67/1.75	0.94/1.88	1.21/2.00	1.04/1.86
Detroit	1.62/2.40	1.56/2.45	1.51/2.50	2.14/2.64	1.77/2.78	1.78/2.76	1.79/2.73	2.14/3.20	2.49/3.67	2.66/3.88	2.84/4.10	2.46/3.90	2.09/3.70	1.94/3.54
Kansas City	0.59/1.42	0.80/1.66	0.99/1.90	1.29/2.40	1.59/2.90	1.99/3.15	2.39/3.40	2.82/4.40	3.24/5.40	3.42/5.82	3.61/6.25	3.19/5.47	2.77/4.69	2.74/4.84
Los Angeles	1.24/3.30	1.12/3.25	0.99/3.20	1.06/3.08	1.13/2.95	0.68/1.92	0.22/0.90	0.14/0.62	0.05/0.35	0.02/0.18	0.00/0.02	0.00/0.01	0.00/T	0.00/T
Minneapolis	0.64/1.08	0.58/1.08	0.52/1.08	0.75/1.38	0.98/1.67	1.34/2.14	1.69/2.60	2.16/3.29	2.64/3.98	2.89/4.49	3.14/5.00	2.64/4.50	2.14/4.00	2.10/3.85
New Orleans	3.49/5.40	3.14/5.05	2.79/4.70	3.00/5.00	3.22/5.30	2.94/5.15	2.66/5.00	2.65/5.12	2.64/5.25	3.18/5.88	3.72/6.50	4.54/6.95	5.37/7.40	4.90/7.08
New York	2.46/3.65	2.41/3.88	2.36/4.10	2.35/4.08	2.34/4.05	2.40/3.92	2.47/3.78	2.50/3.90	2.54/4.02	2.45/3.91	2.36/3.80	2.81/4.25	3.26/4.70	2.99/4.95
Philadelphia	2.57/3.70	2.57/3.69	2.57/3.68	2.60/3.84	2.62/4.00	2.56/3.91	2.49/3.82	2.44/4.11	2.39/4.40	2.54/4.25	2.69/4.10	2.94/4.24	3.19/4.37	2.99/4.91
Pittsburgh	2.14/3.13	1.96/2.98	1.77/2.83	2.06/3.15	2.34/3.47	2.32/3.44	2.29/3.40	2.39/3.58	2.49/3.75	2.68/3.98	2.86/4.20	2.79/4.35	2.72/4.50	2.52/4.15
St. Louis	1.39/2.70	1.48/2.80	1.57/2.90	1.92/3.42	2.27/3.95	2.43/3.88	2.59/4.10	2.86/4.65	3.13/5.20	2.96/5.25	2.79/5.30	2.60/4.78	2.41/4.25	2.28/4.18
San Francisco	2.49/5.00	2.24/4.86	1.99/4.71	1.96/4.13	1.94/3.55	1.30/2.54	0.67/1.54	0.44/1.12	0.18/0.69	0.09/0.37	0.00/0.05	0.00/0.03	0.00/0.01	0.00/0.00
Seattle	4.12/5.25	3.34/4.92	2.55/4.60	2.18/4.02	1.81/3.43	1.76/3.16	1.64/2.90	1.53/2.45	1.42/2.00	1.09/1.86	0.76/1.73	0.48/1.20	0.19/0.67	0.18/0.78

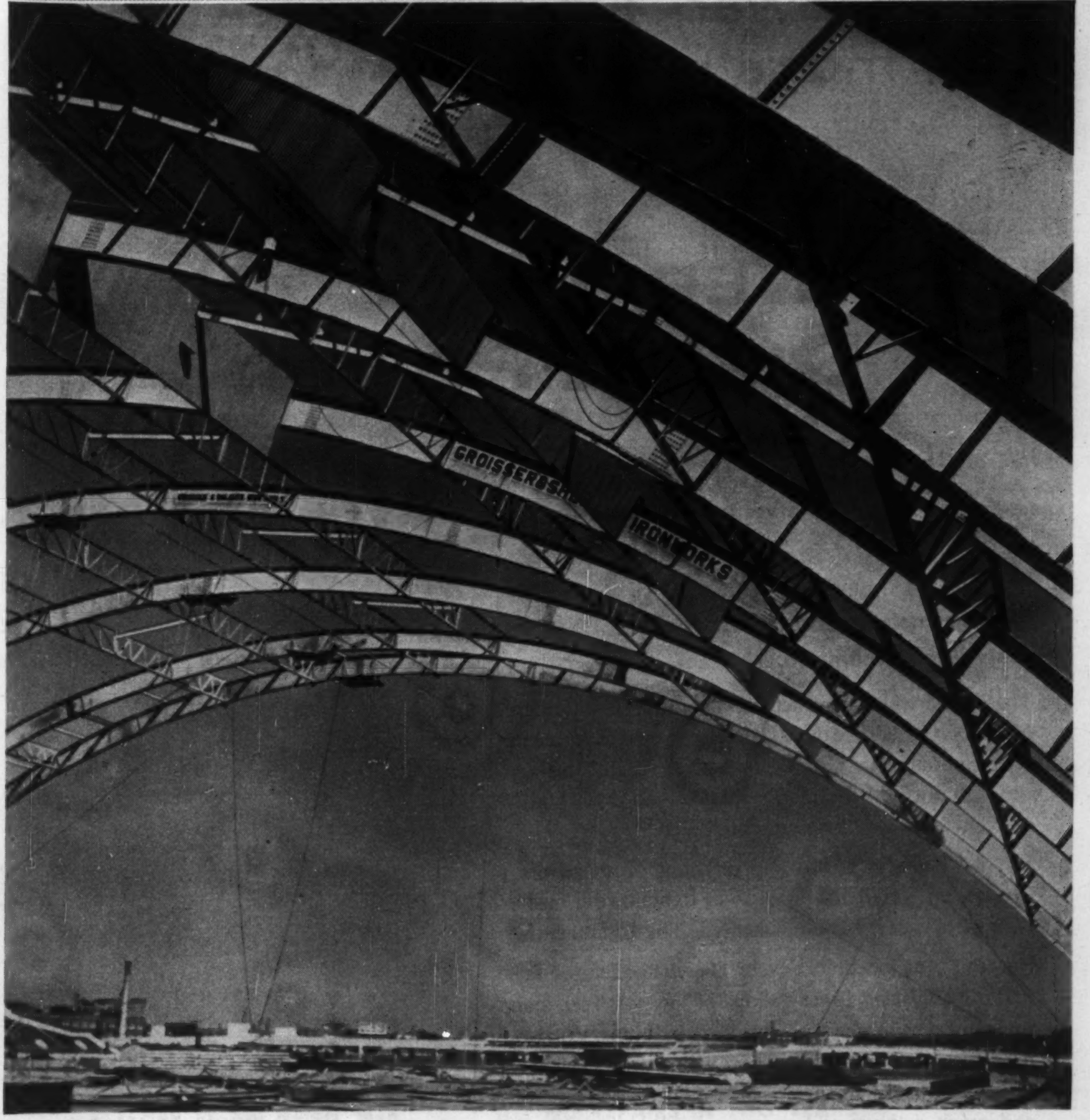
T—Traces (Less than 0.005 inches)

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.
Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	Jan.	Mid Jan.-Mid Feb.	Feb.	Mid Feb.-Mid Mar.	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May	May	Mid May-Mid June	June	Mid June-Mid July	July	Mid July-Mid Aug.
Atlanta	43.5/45.5	44.0/46.4	45.1/47.9	47.5/50.1	51.2/53.6	55.9/58.0	60.9/62.6	64.9/66.3	69.0/70.5	73.5/74.6	77.3/78.1	78.5/79.3	79.0/79.9	78.9/79.9
Baltimore	32.9/35.7	32.4/36.0	34.6/38.0	38.1/41.7	42.0/45.7	46.6/49.4	51.9/53.6	57.5/59.0	63.4/64.6	68.2/69.5	72.5/73.8	75.2/76.6	76.2/77.5	75.5/77.3
Birmingham	43.5/46.5	44.4/47.6	46.0/49.4	48.8/51.7	52.4/54.7	56.6/58.5	61.1/62.6	64.6/65.3	68.4/70.2	72.4/74.5	76.8/78.1	78.4/79.7	78.9/80.0	79.0/80.3
Boston	27.9/31.2	26.4/29.6	27.8/30.0	31.4/34.0	35.6/38.6	41.1/43.3	46.7/48.3	51.5/53.1	56.7/58.4	56.8/58.6	66.3/68.1	69.6/71.1	70.2/74.1	72.1/73.4
Chicago	23.2/28.1	23.1/28.1	24.7/30.0	29.2/34.2	34.6/39.1	40.9/43.8	47.5/48.8	52.7/54.7	57.9/60.5	63.1/66.1	68.0/71.2	71.6/74.0	73.7/75.1	73.8/75.4
Cincinnati	29.8/34.6	29.9/34.4	31.6/36.0	35.2/39.2	39.6/43.1	45.4/48.1	51.4/53.3	56.4/58.6	61.5/64.0	65.2/67.0	71.2/73.0	73.4/75.2	74.1/75.8	73.9/75.7
Cleveland	26.9/30.5	26.0/29.6	26.2/29.7	29.8/33.7	34.7/38.8	40.3/43.2	46.2/47.8	51.8/53.9	57.9/60.3	63.5/65.7	68.2/70.2	71.2/73.0	72.7/74.2	72.5/74.2
Dallas	44.1/47.5	45.8/49.2	48.8/52.2	51.9/55.6	55.5/59.6	60.1/63.7	64.2/67.3	68.4/71.1	72.6/75.0	77.2/78.8	81.1/82.2	83.3/84.8	84.5/86.4	85.6/87.3
Denver	27.0/30.0	27.9/31.5	30.5/34.7	33.1/36.8	35.9/39.1	40.4/43.2	46.3/48.6	51.1/53.4	55.2/57.4	60.0/62.1	65.4/67.5	69.7/71.5	72.1/73.7	72.5/74.0
Detroit	23.8/27.7	24.2/27.8	24.6/28.9	27.9/32.1	33.1/37.2	39.3/42.1	45.6/47.1	51.0/52.8	56.5/58.7	62.3/64.4	67.3/69.9	70.6/72.1	72.5/73.5	72.3/73.6
Kansas City	30.0/31.9	30.2/33.6	32.2/37.1	37.3/41.2	41.9/45.9	48.6/51.3	54.7/56.7	59.9/61.7	64.6/66.4	69.4/71.2	74.2/76.0	78.0/79.6	80.0/81.5	80.2/81.8
Los Angeles	52.7/54.0	52.6/54.3	52.9/55.1	54.1/56.3	55.4/57.4	56.6/58.4	58.1/59.7	58.8/61.3	61.4/62.8	62.5/64.0	63.9/65.4	65.4/67.0	66.9/68.4	67.5/68.9
Minneapolis	13.4/16.5	13.3/17.7	15.0/20.8	21.7/25.9	29.9/32.5	37.3/40.3	44.7/47.9	51.3/54.4	57.2/60.2	62.2/64.9	66.6/69.1	70.3/72.5	72.9/74.9	73.2/75.0
New Orleans	52.6/56.0	54.0/61.4	55.9/59.3	57.6/60.8	60.6/63.0	63.4/65.7	67.4/69.1	70.7/72.1	73.8/74.9	77.0/78.1	79.9/80.9	81.0/81.9	81.4/82.3	81.8/82.7
New York	32.0/34.6	30.9/33.6	30.9/33.6	34.1/36.8	38.7/41.3	43.6/46.0	49.0/51.0	54.6/56.3	60.6/62.1	65.9/67.5	70.4/72.2	73.6/75.0	75.2/76.3	75.1/76.3
Philadelphia	31.8/35.0	31.1/34.3	32.3/35.3	36.4/39.2	40.8/43.5	45.6/47.9	50.8/52.6	56.2/58.0	62.3/64.0	67.5/69.2	71.5/73.1	74.1/75.4	75.8/76.6	75.1/76.3
Pittsburgh	26.9/30.1	26.4/30.5	26.9/32.0	30.5/35.4	36.0/40.6	43.9/46.5	48.0/49.8	53.1/55.1	58.7/60.9	63.5/65.8	67.4/69.7	70.2/72.0	71.4/72.8	71.0/72.4
St. Louis	30.1/34.7	31.3/35.7	33.7/38.1	37.8/41.8	42.9/46.3	48.6/51.5	54.5/57.0	59.8/63.3	64.0/66.6	68.7/71.5	73.5/76.2	76.9/79.0	78.7/80.2	78.5/80.1
San Francisco	46.9/49.1	47.3/50.8	50.0/51.7	51.0/52.8	52.4/55.1	52.4/54.2	53.2/55.0	54.3/55.9	55.9/57.4	57.5/59.1	58.8/60.5	59.6/61.0	59.7/60.9	59.5/60.7
Seattle	37.2/38.5	38.2/40.0	39.7/42.0	41.7/43.3	43.6/44.7	45.8/47.2	48.2/49.9	51.0/52.9	54.2/56.3	56.9/58.5	59.3/60.4	61.7/62.7	63.6/64.6	63.8/65.0

ON THE NEWS FRONT WITH STRUCTURAL STEEL



Airplane Hangar – Soaring to a high of 78 ft at midpoint and spreading 320 ft from pin to pin is the steel framework of the new American Airlines Hangar at Boston's Logan Airport. A substantial tonnage of Bethlehem Structural Shapes was used in constructing the framework. When completed, the hangar will comfortably house the biggest transport planes now in operation.

Architects and Engineers: Samuel Glaser Associates, Boston, Mass.; *General Contractor:* Farina Brothers Co., Newton, Mass.; *Steel Fabricator and Erector:* Groisser and Shlager Iron Works, Somerville, Mass.

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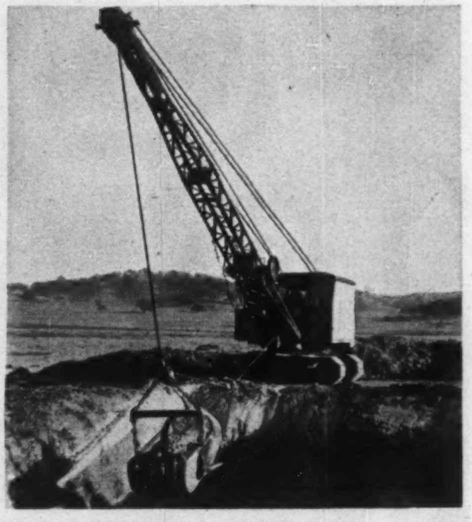

25% MORE WORK AT HALF THE FUEL COST

California contractors McGuire & Hester report they're getting 25% more work—and spending 50% less for fuel—since they converted this ¾-yard dragline from *gasoline to General Motors Diesel power*. The compact "4-71" GM Diesel did such a good job that the contractor repowered two more shovels with GM Diesel.

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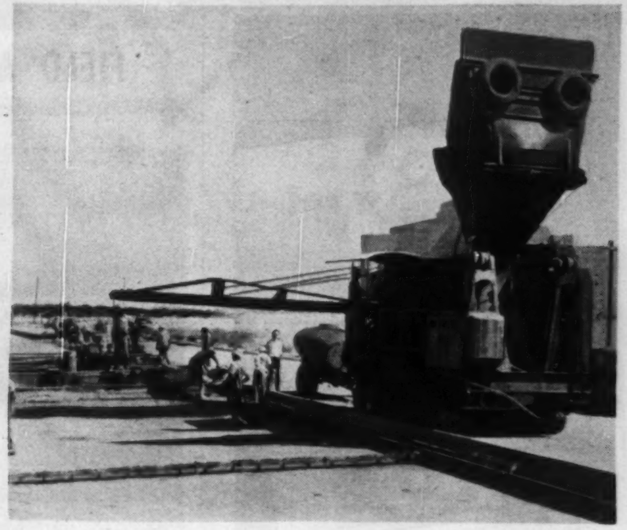
WORKS ⅓ FASTER—CUT FUEL COSTS 60%

Maryland contractor Charles F. Knox, Jr., reports he gets ⅓ more production, has cut fuel costs 60%, since he converted this ¾-yard shovel from *gasoline to GM Diesel power*. The shovel works 8 to 10 hours a day, costs far less to maintain. You can specify GM Diesel power in over 50 shovel models built by more than 20 manufacturers.



PAVES 1400 FEET A DAY

This Koehring Paver, powered by a compact, quick-accelerating GM 2-cycle Diesel, lays 1400 feet of 25-foot wide pavement per day for the Austin Road Company of Dallas, Texas. You can lay pavement faster and at less cost with GM Diesel power—available as original equipment in 8 paver models made by 4 different manufacturers.

"FASTEST DITCHER IN THE AREA"

McGuire & Hester *specified* GM Diesel power in two new Buckeye Ditchers and a Lorain Crane, as well as repowering a Hough Payloader, after getting *more work at less cost* with GM Diesel power in their dragline. The master mechanic calls this GM Diesel-powered Buckeye Ditcher "fastest in the area."

NO REPAIRS IN TWO YEARS

These GM Diesel-powered LeTourneau-Westinghouse Tournapulls worked over two years in flying abrasive dust without losing a day for repairs, reports Arizona contractor Link L. Colvin. In every kind of earth-moving equipment GM Diesel power lasts longer, works faster, costs less to run and maintain.

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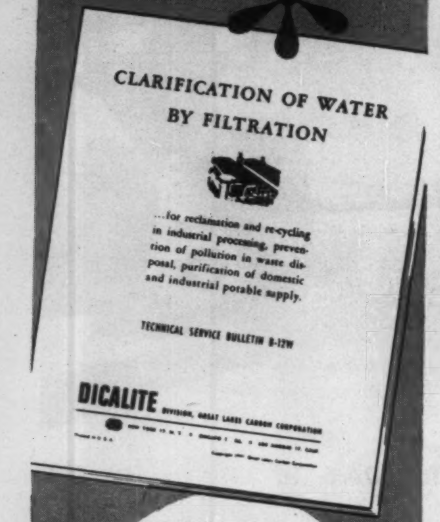
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FIELD AND OFFICE

FOUR DOUGLAS FIR LOGS were used as the main structural element in this bridge on a logging railroad in Washington.

Prestressed Counterbalanced Log Span Provides Wide Opening for Floods

Builders of logging railroads have long been noted for their ingenuity in use of local materials to meet their bridging problems. The latest example comes from W. K. Merridith of the Logging Engineering Department of Rayonier, Inc., at Sappho Camp in the Olympic peninsula of the state of Washington.

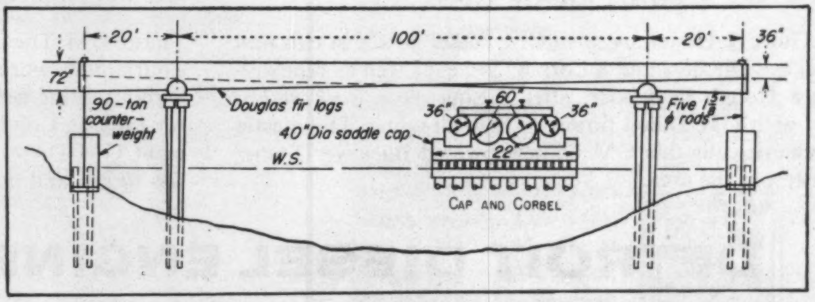
An old timber bridge with short spans over the Hoko River was to be replaced at a point where driftwood during floods had frequently caused trouble in the past because of the small openings and low headroom at time of high water. The solution was the prestressed counterbalanced log bridge shown above.

Live load for the bridge was that created by a 160-ton locomotive and a 100-ton crane. Four log stringers were used, 142 ft long, with 72-in. butts and 36-in. tops.

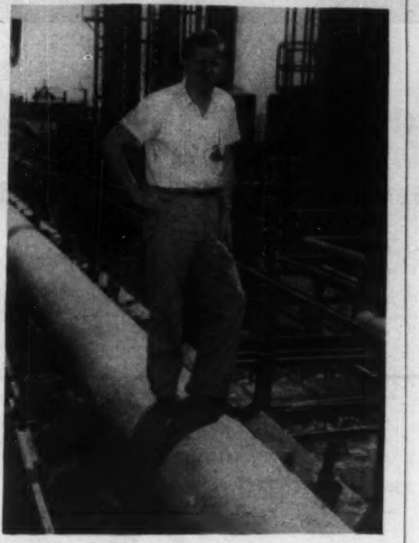
The central span is 100 ft, and counterbalance arms at each end are 20 ft long. Each counterweight block is of concrete weighing 90 tons. Additional stability against uplift is provided by eight timber piles driven into the ground under each counterweight and extending 8 ft up into the block. Five steel rods, 1⅝-in. diam, secured to plates in the bottom of each counterweight and extending up through a steel beam on the top of the log ends, were used to develop sufficient prestress in the center span to carry 50% of the live load before the log stringers were stressed in the normal direction.

All piles and timber except the log stringers were treated with creosote. The stringers are covered on the top half with 24-gage galvanized sheets.

The design work was done by W. K. Merridith and John Warder. Designs were checked by Professors J. Kenneth Pearce, B. L. Grondal and A. L. Miller of the University of Washington. Construction was carried out under the direction of R. F. Cunningham, general logging superintendent for Rayonier, Inc., and J. M. Meeley, construction supervisor.



IN THIS LOG BRIDGE, 90-ton counterweights, given added stability against uplift by deeply driven piles, were used to develop a negative deflection of three inches at the center of the main span.



Polyester Resin Repairs Header

A recent example of the utility of polyester resin in the maintenance of plant equipment was the repair of a water header at the Bishop, Texas, plant of Celanese Corp. of America.

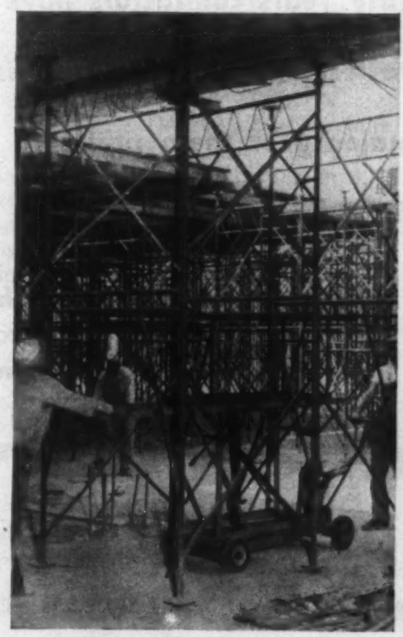
Approximately 40 ft of the pipe had eroded, with large holes in some areas and the balance of the pipe rusted almost paper thin.

The repair procedure used was: first, scale was knocked off and two plies of glass cloth, saturated with a self-curing blend of polyester resin, were applied over the large holes. Leaks were then plugged and two additional plies of glass cloth, saturated with the resin, were wrapped about the rusted area.

Just 30 gal of resin were required and total material costs amounted to $137.88. It was, of course, unnecessary to remove the multiple connections or the pipe itself, and, thus, many man-hours of labor were eliminated.

Hoist and Dolly Cut Shoring Time

Moving of assembled shoring units from pour to pour has resulted in time and labor savings on a Los Angeles building project. Groups of three units—tied together with bracing—were jacked up by a hydraulic hoist and gantry mounted on a rubber-tired dolly, then rolled away to the new location. The technique was made practicable by pouring the second floor slab of the 380x730-ft building in three sections. When the first pour was completed most of the shoring units were simply relocated to the next area. Screw jacks mounted at the top of the shore frames were used for positioning as well as an aid to stripping. Patent Scaffolding Co., Inc. served as subcontractor on the shoring system to general contractor C. L. Peck Inc. of Los Angeles. The building was designed for the Broadway-Hale Department Store, by Chaix and Johnson, architects, and Brandow and Johnston, structural engineers.



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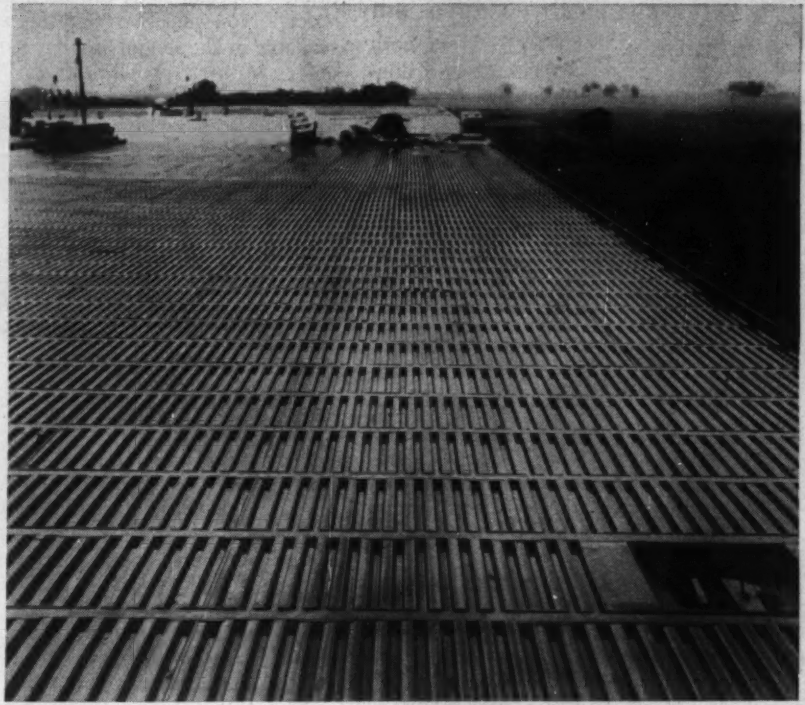


TOP VIEW of completed roof deck installation at Sunstrand Machine Tool Co. plant at Belvidere, Ill. The deck is ready for insulation and built-up roofing.

SUB-PURLINS are aligned by lightweight jig then welded to building purlins.

PANELS are dropped in place between sub-purlins with one-corrugation overlap.

CLIPS, hooked to integral sub-purlin tracks, slide over the corrugated panels.

Roof Deck Easy to Install

Three years of intensive research have resulted in a new roof deck design consisting of a full-floating panel system secured by clips to a grid of sub-purlins. The result is a deck that affords the advantages of continuous beam action with positive lateral ties for building purlins.

Installation of the Ingersoll roof deck is reportedly quick and simple. First the grid of sub-purlins is set up and aligned on 24-in. centers by a lightweight metal jig. A ¾-in. long weld secures them rigidly to the building purlins. Then, corrugated panels—which may be aluminum, porcelain enameled or galvanized steel—are dropped in place with a one corrugation overlap at the ends. The sub-purlins retain the panels laterally and simple slide-on clips complete the job. No drilling, bolting, riveting or further welding is required to install the Ingersoll roof deck.

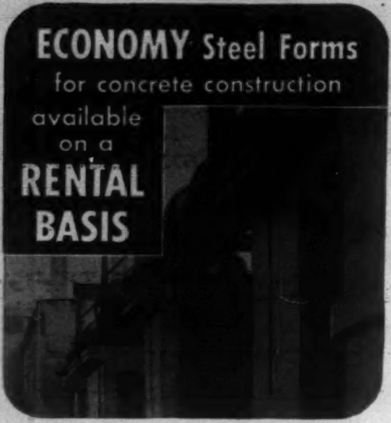
The sub-purlins are rolled from low-carbon structural steel in lengths up to 24 ft and in two gages—.062 and .083 in.—with sufficient strength to permit 8-ft spans. The C-type clips are 6 in. long and hook to an integral track at the sides of the sub-purlin and slide over the panels. This gives the panels full freedom of lateral movement for expansion and contraction and easy adjustment. The integral track also serves as a gutter to prevent dripping of adhesives when the built-up roofing is applied.

The finished roof deck needs no field painting and offers a bright, attractive ceiling surface as well as high load-bearing capacity. When the aluminum panels are used, insulation requirements are reduced since the surface reflects an appreciable quantity of radiant heat.

The sub-purlin design permits the installation of most accessory units (sump pans, ventilator units, etc.) without cutting and reinforcing of panels. Even after the deck has been erected accessories usually can be accommodated without disturbing structural members. The necessary panel or panels are removed and the equipment put in place. In cases where openings wider than 24 in. are required the sub-purlins can be cut in the field and reinforced with special sections.

The roof deck components are manufactured by the Reflectal Corp., a subsidiary of BORG-WARNER CORP., 310 S. MICHIGAN AVE., CHICAGO 4, ILL.

(New Products continued on page 64)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Old Traffic Signs Needn't Fade Away—Just Re-face 'em

Ready-made traffic sign faces—both reflective for night visibility and non-reflective for daytime use—are now available for renovating worn-out traffic signs.

Made of Scotchlite brand reflective sheeting or non-reflective Scotchcal brand plastic film, the prepared sign faces are pre-cut to size and the legend applied by the manufacturer. On the back of the sheet is an adhesive that when activated by heat or liquid activator effects a bond between the sheeting and the sign.

Renovating old signs with new faces involves cleaning the old sign face; trimming the new sign face with scissors to proper size; removing the liner from the back of the sheeting; and applying to the sign blank with a heat-lamp vacuum applicator or by hand roller. The renovated sign is ready for immediate use.

The sign faces reportedly will withstand extreme weather conditions and will not crack, chip or fade.

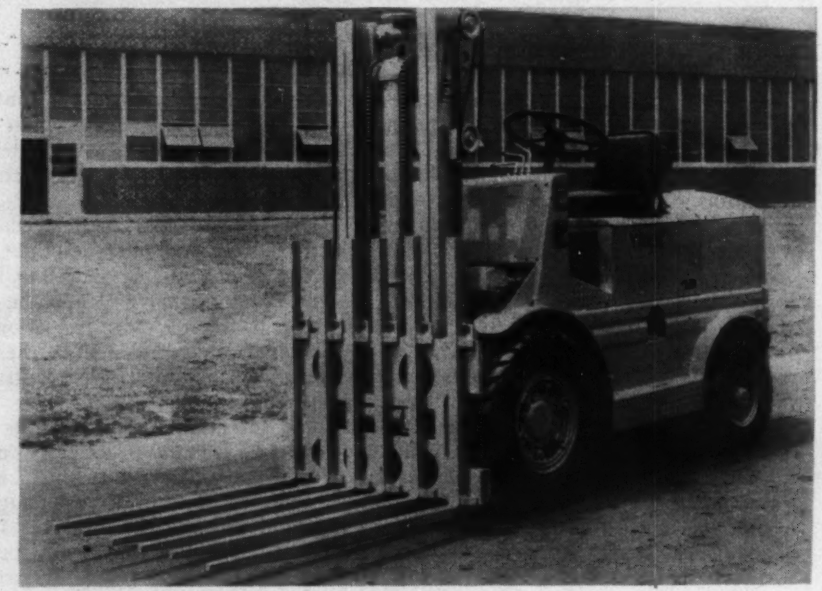
Reflective sign faces are available in the regulatory, warning and night parking series, bridge-end markers and barricades. Special signs can be made to order. Non-reflective sign faces are available in the school and day parking series. Minnesota Mining and Mfg. Co., Dept. G5-4, 900 Fauquier St., St. Paul 6, Minn.

Raceways Get Added Safety With Plastic Insulation

Electrical raceways are said to be even safer with a new connection concept using built-in insulation. Plastic bushings—colored bright blue for easy identification and inspection—are used to prevent wiring from coming in contact with the metal of the raceway at the outlet.

Called the T&B Insuline, the new type fittings are designed for rigid, EMT (Electrical Metallic Tubing) and flexible raceways. Besides reducing wire damage the fittings are reported to cut in half the effort required to pull wire through the raceway. Further, the bushings and connectors are integrally mounted at the factory so that loss or error is eliminated.

The first Insuline fitting available is for EMT. Others soon to be ready



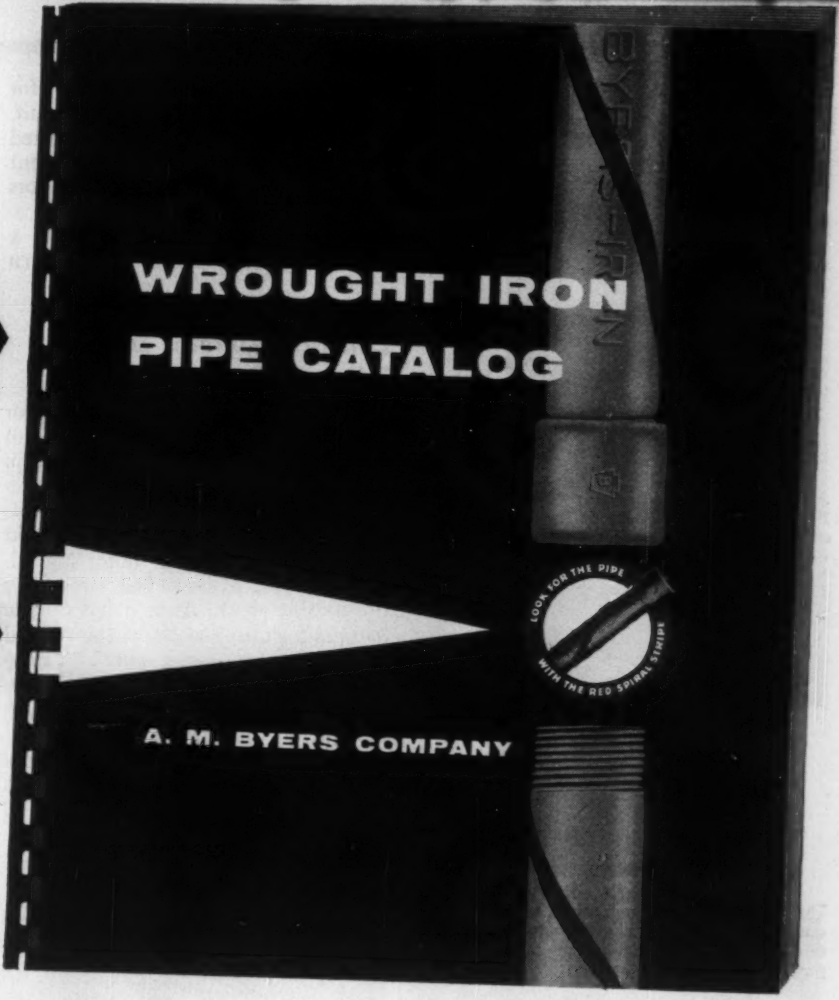
Multiple Forks Eliminate Pallets

Palletless handling of standard concrete or cinder blocks is now possible through a multiple fork attachment. These multiple forks eliminate the necessity for pallets or skids by using the bottom layer of blocks to support the load by entrance of the forks through the block cavities. The fork mounting is designed to allow a one inch motion of each fork independently, left or right, in order to avoid chipping or breakage of blocks. A special design incorporating surface plates enables the load to be carried securely against the fork backs. Available in lengths up to 48 in. in increments of 2 in. and with fork spread to 42 in., the multiple forks are said to be easily attached or removed and do not reduce the rated truck capacity. Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.

NEW

WROUGHT IRON PIPE CATALOG

. . . Complete facts and figures


WROUGHT IRON PIPE CATALOG
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The NEW Byers Wrought Iron Pipe Catalog wraps up between covers complete facts and figures on wrought iron pipe and tubular products.

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. . . detailed instructions on how to specify plus a list of wrought iron standards and specifications

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. . . helpful tables on decimal equivalents for calculating; dimensions of pipe in fractions of an inch; conversion factors

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Panels by RESOLITE

A blow-torch applied directly to edge of a Resolite Fire-Snuf translucent structural panel slowly ignites the resin and small flames appear.

The blow-torch is turned aside, and five seconds (note stop watch) after source of heat and flame is removed fire on the Fire-Snuf panel is self-extinguished.

When building codes require a flame spread rating under 75 you can now specify Resolite Fire-Snuf translucent panels for plant daylighting.

These panels are molded of fiberglass and HETRON*, a permanently fire-resistant resin, manufactured by Hooker Electrochemical Co.

Fire-Snuf panels, with flame-resistance chemically locked-in, are just as shatterproof and retain all the other features—high strength, stability and load bearing characteristics—which have made Resolite the most popular new material for plant daylighting.

Fire-Snuf is available molded in all standard Resolite corrugations in lengths up to 13 feet and widths up to 42 inches.

For additional information on Fire-Snuf, see Sweet's Files, consult your distributor or write:

RESOLITE
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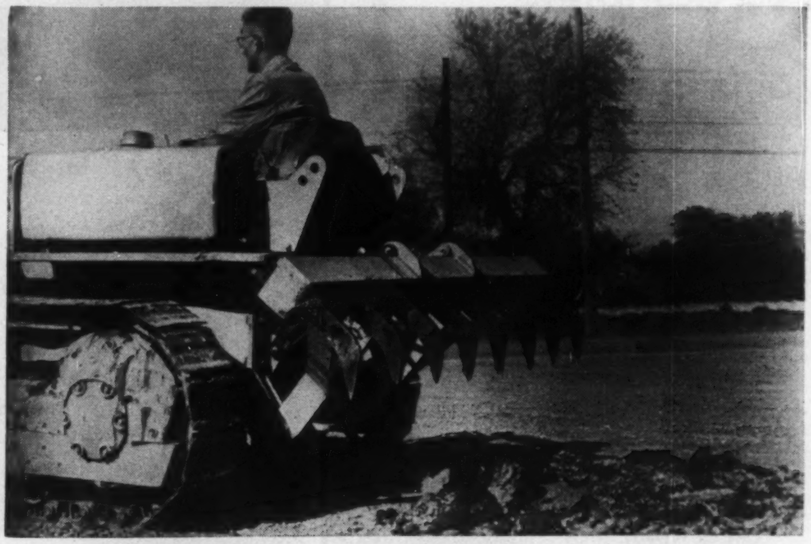
Box 524, Zelienople, Pa.
Distributors in principal cities, U.S. and Canada

include Tite-Bite connectors for armored cable and flexible conduit, Chase nipples and new insulated metallic bushings. Under development are self-insulated threadless connectors for rigid conduit and liquid-tight raceway connectors. The Thomas & Betts Co., 36 Butler St., Elizabeth 1, N. J.

Concrete Vibrator Develops 2 hp and Delivers 9,000 vpm

The new Model BU electric vibrator is a ruggedly built unit that will run at 9,000 vpm while developing 2 hp. Power is developed by a specially designed universal, totally enclosed, high speed ball bearing motor. A skid mounting protects the motor and allows the unit to be pulled around by the flexible shaft. Also, it has double handles for lifting in either the vertical or horizontal position. The ⅜-in. flexible shaft used can be obtained in lengths of 7, 14, or 21 ft, and combinations of these lengths can be attached to each other to give longer lengths up to 35 ft. The machine is furnished with a 2½ in. model 2500 vibrator head obtainable with either a steel or rubber tip. The eccentric weight is mounted in ball bearings at each end. Additional heads interchangeable with Model 2500 are: Model 1600 (1⅜x10 in.), Model 2000 (2x10 in.). Stow Mfg. Co., 19 Shear St., Binghamton, N. Y.



Scarifier Built for Light Tractors

A rugged scarifier is available in four models of varying size and is designed to rip any hard packed surface rocky or frozen soil, clay, macadam, or shale. The width of the ripping swath varies from 5 ft to 7 ft in the different models and the number of teeth from six to eight. The scarifier is said to enable lighter crawler rigs to tackle tougher digging and excavating jobs without excessive wear. The scarifier carriage is of a square, all-welded box construction using 1-in. steel plate. Teeth are made of grader blade steel and are locked in position with steel wedges that drive them back over a locking bar. Twin hydraulic cylinders give quick adjustment of ripping depth from 9-in. penetration to the full-up position with teeth 20 in. above ground. The scarifier is shipped with hydraulic cylinders and tubing and a selector valve to work with any specified hydraulic system, Caterpillar D-2 and D-4, International-Harvester TD-6 and TD-9, Allis-Chalmers HD-5 and Oliver A and B both wide and narrow. Teal & Co., 1417 N. 57th St., Omaha, Neb.

PUBLICATIONS

Prestressing manual—A prestressing manual, designed for supplementation as new material becomes available, includes sections on structural design, construction methods, equipment and research for prestressing concrete. The first chapter of the first section reviews very simply the basic equations used in prestressed concrete design, the basic procedures followed in design, and the general specifications follow. The first chapter of the second section is devoted to actual construction methods and procedures followed using the methods of Prestressing Inc. The equipment section contains illustrations of machines and fittings available to the corporation's licensees. Section 4, Research, is devoted to test results. PRESTRESSING INC., TRANSIT TOWER, SAN ANTONIO, TEX.

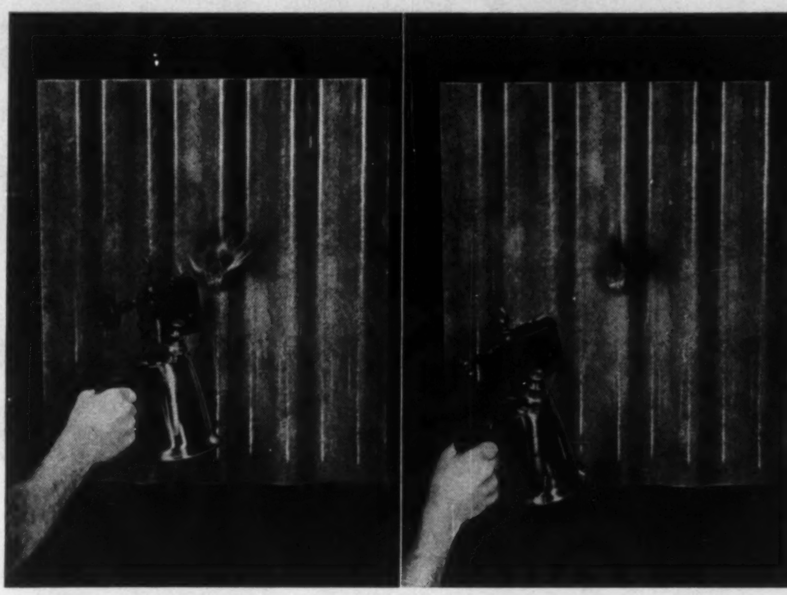
Roofing—A new 20-page product booklet "Roofing"—Then and Now" has just been published. In a light-hearted but factual fashion the booklet presents a brief history of roofing. Research produced information on the various attempts at roofing up to the development of Glasfab glass fiber roofing membrane. TWINSBURG-MILLER CORP., P. O. Box 207, TWINSBURG, OHIO.

Valves—The Golden-Anderson cushioned Flowtrol valve is described in a new technical bulletin recently published. The valve was designed to replace globe, angle, plug and gate valves that require frequent manual opening and closing. Reportedly, one man can operate the valve to either the fully open or tightly closed position when the valve size is 2 in. or 36 in. or when the pressure in the line is 15 or 400 psi. Bulletin W8-A. GOLDEN-ANDERSON VALVE SPECIALTY CO., 1208 RIDGE AVE., PITTSBURGH 33, PA.

Distribution and service connectors—The new 22-page T&B Bulletin 71 is a single reference that covers the company's new line of electrical distribution and service connectors. The catalog is of value to utility purchasing agents, engineers, line foremen and other operating personnel. Pages are bound loose-leaf style for convenience in making changes and additions. A feature of the publication is its graphic index. This is a pen and ink sketch of the composite pole-line to house installation of distribution fittings. The drawing shows the complete range of the company's compression con-

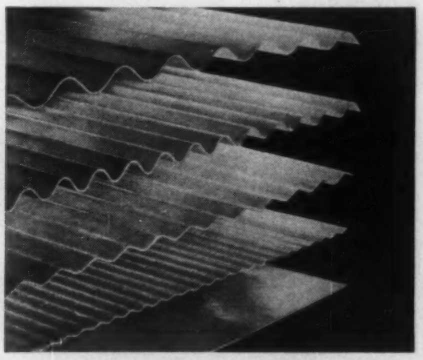
(Continued on page 70)

Your plant windows will never have to take this "torture test"



NEW FIRE-RESISTANT PLASTIC makes possible rugged, shatterproof translucent glass fiber panels for plant windows, skylights, partitions, stair wells. Blowtorch flame blackens this window panel, but doesn't make it burn freely. See how burning stops when the flame is removed. Panel contains HETRON®, a new resin that doesn't support fire.

IF YOUR BUILDING CODE calls for a flame spread rating under 75 you can meet the requirement with a HETRON-based panel. You can get panels with ratings of 75, and lower—equivalent to the Building Officials Conference of America classification of "slow burning" or "flame retardant."



YOU CAN SELECT rugged, nonshattering, fire-resistant sheets made with HETRON, in a full range of sizes, gauges, colors; corrugated or flat; translucent or opaque. We'll be glad to tell you which sheet-makers can supply you. Write also for test data and pictures, plus descriptive information on HETRON resins.

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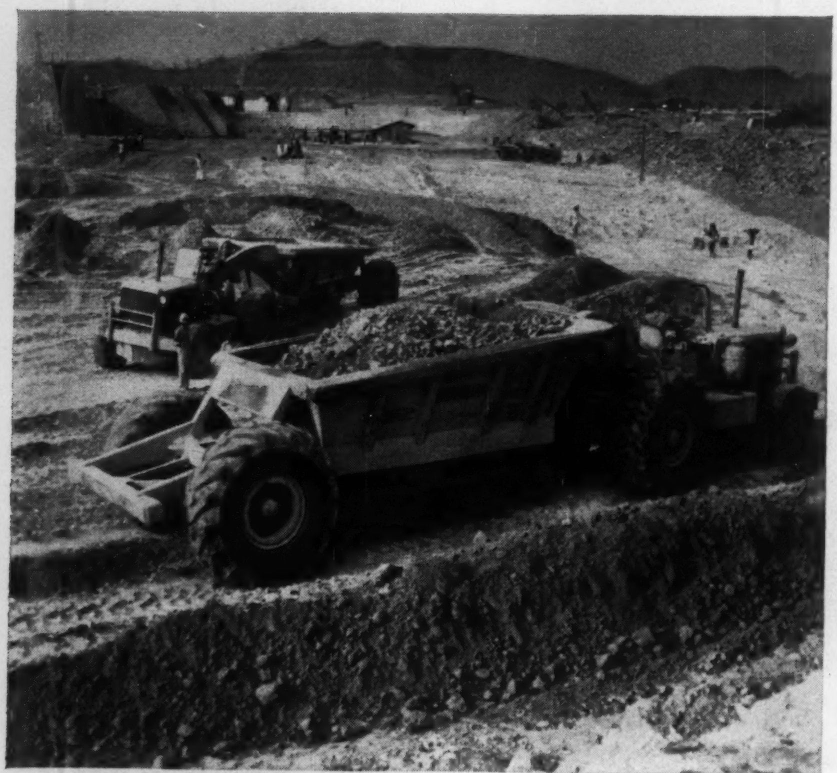
176 CAT* MACHINES BUILD INDIA'S GIANT HIRAKUD DAM

Maintain schedules in extreme dust and heat



A Caterpillar DW20 Tractor with W20 Wagon hauls fill material from the borrow area to the Hirakud Dam site.

A powerful Cat D8 Tractor equipped with No. 8A Bulldozer works steadily on the dam which will create the fourth largest man-made lake in the world.

India's State of Orissa has long been plagued by the Mahanadi River. This turbulent waterway has written its ruinous course across the plains 39 times since 1870. Precious land has been washed away. Homes and industries have been destroyed. And long, hard years of drought and famine followed.

India's engineers tackled the problem and are answering it with the Hirakud Dam, now under construction. Thirty-six thousand workers have been assembled for the mighty task. Four complete townships have sprung up to accommodate them in land that was once tiger-hunted forest. Many miles of roads and railway have been built to serve the site.

The new dam will rise to a height of 195 feet from the river bed and will stretch three miles across the river. When all construction on the Hirakud Dam is complete, two million acres of land can be irrigated. Orissa will be free of the dread of floods and famine.

The job has not been easy for the men or the machines they operate. Monsoon floods and a burning sun are severe handicaps. The engineers have only 160 days in the year to work on the project. And on 100 of these days, the heat is so intense that work can be carried on only in the cool of the evening and at night.

Local manpower is used. And the machines—tractors, motor graders and high-speed, big-capacity earthmovers—are Caterpillar*. Men and machines are doing a fine job under tough conditions.

Dirt and flying dust don't slow down the 176 pieces of Cat-built equipment. Air cleaners bathe the incoming air in

A Caterpillar No. 12 Motor Grader levels fill on a dike of India's Hirakud Dam.

oil and remove 99% of the dust. Seals keep destructive particles out of important working parts and keep oil in. All engines run efficiently on low-cost No. 2 furnace oil without fouling. This means cheap fuel and less of it, less maintenance and down time.

MAIN DAM, HIRAKUD DAM PROJECT, ORISSA, INDIA

Length of dam	3 miles
Length of dikes	17 miles
Length of concrete sections	4000 ft.
Max. ht. above river bed	195 ft.
Reservoir area	150,000 acres
Land to be irrigated	2,000,000 acres
Power potential	300,000 KW
App. cost of project	nearly $2 billion

There are other definite advantages for standardizing on rugged yellow equipment. Many parts are interchangeable. There's one source for parts and service—the Caterpillar Dealer. Maintenance men are more efficient on familiar machines. Operators get more work out of them.

Your Caterpillar Dealer has performance data on all sorts of jobs. He'll be glad to give you complete facts. Phone him today—ask him to demonstrate on your toughest job.

A big yellow DW21 with No. 21 Scraper loads and hauls fill on dam construction near Orissa, India.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

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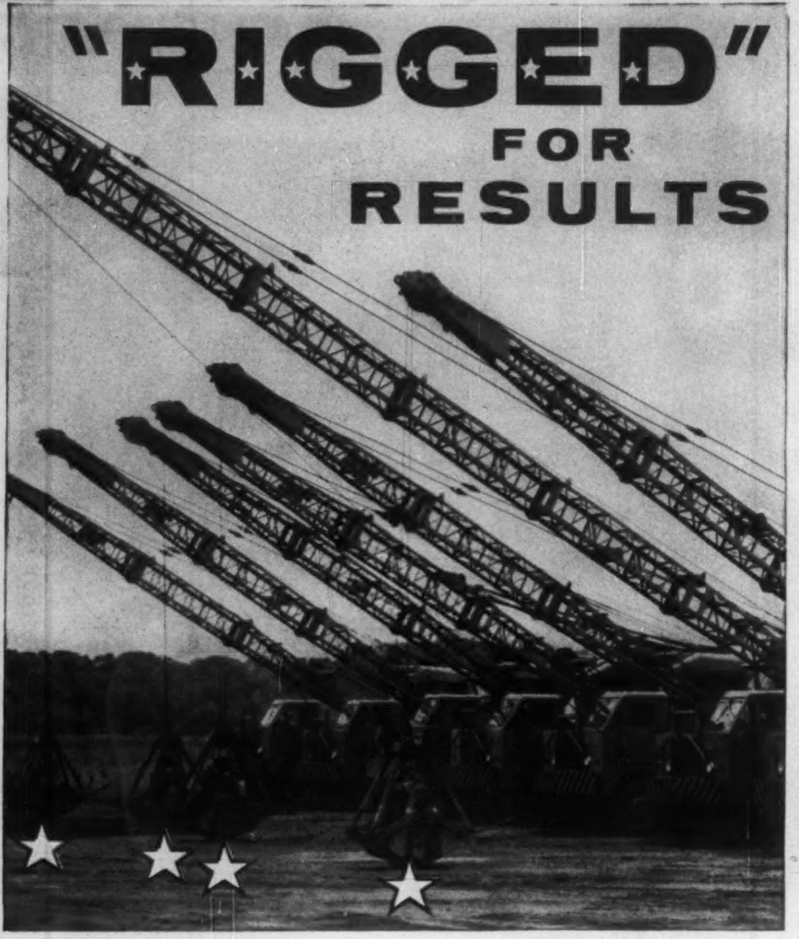

This impressive fleet of Byers Truck Cranes is lined up to start a Walsh-Perini-Groves-Slattery Co. construction job for the United States Steel Fairless Plant at Morrisville, Penna.

Four of these cranes are "*Rigged for Results*" for faster, more efficient excavating by being equipped with

OWEN Buckets

Owen wins the approval of leading contractors because of their superiority in handling all excavating, trenching, dredging and rock handling operations.

Owen material handling buckets are just as popular because they are specially designed to meet the wide variety of operations encountered in this field.

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nectors from pole to service entrance. Each type connector is related to a specific page in the new catalog, to give in tabular form a full description listing uses and sizes. The Thomas & Betts Co., Elizabeth, N. J.

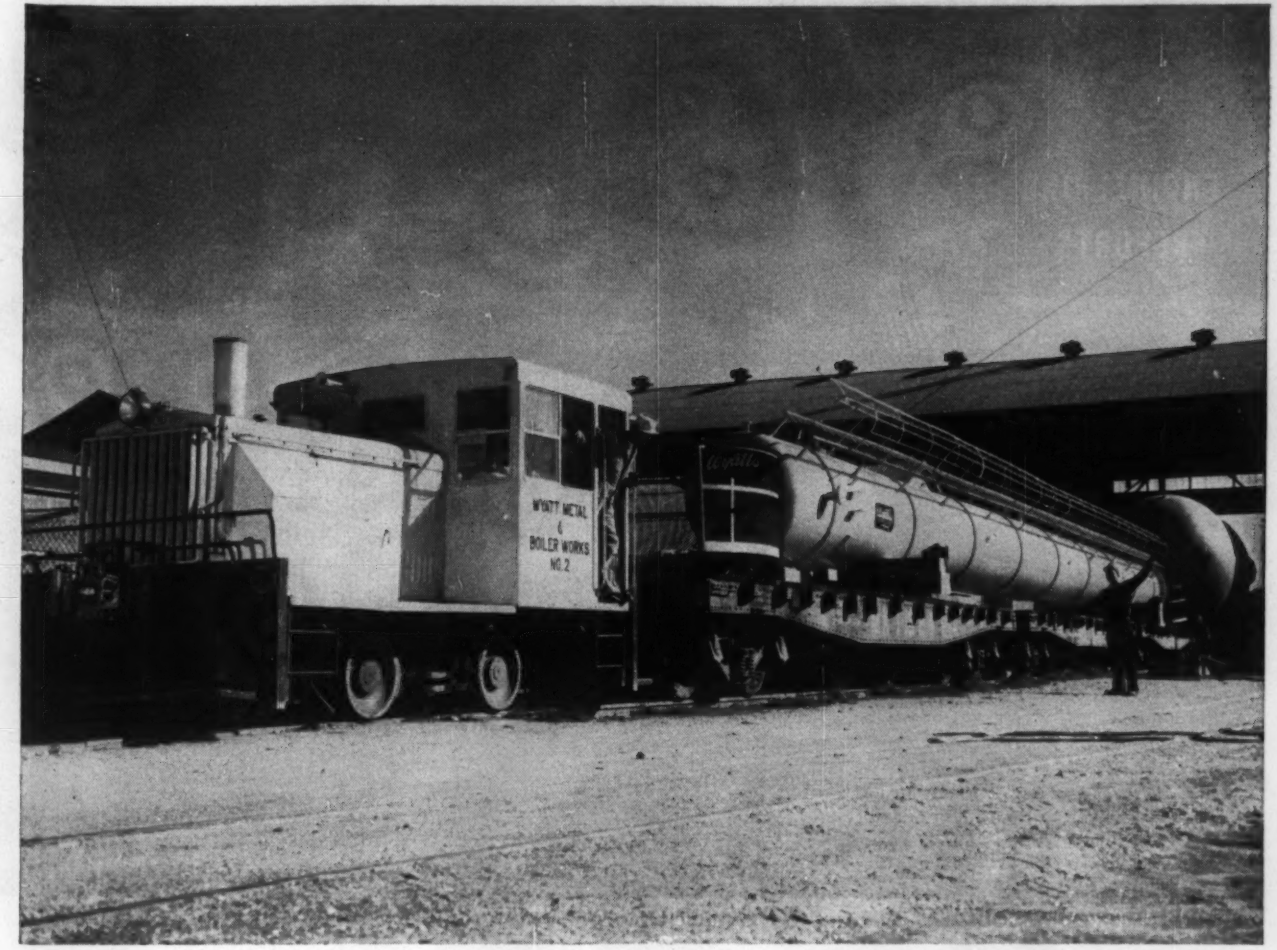
Light structural beams—A 20-page booklet describes the uses of light structurals called "Junior Beams." Booklet contains pictures showing how the light structurals are adapted to floor and roof design in buildings and to miscellaneous uses in other fields. Specifications and design information are also included in the booklet. Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

Sludge plants—A new bulletin, No. 22S79, on packaged activated sludge plants contains descriptions, general specifications and suggested plans for small sewage treatment plants to serve population equivalents of 1,000, 1,500 and 2,000. The package plants are reportedly suitable for industrial installations, housing developments, resorts and small communities. Walker Process Equipment Inc., 840 N. Russell, Aurora, Ill.

Heavy duty graders—The Galion Model 118 all-gear, tandem-drive motor grader is described and illustrated in a new 28-page catalog. Operating and construction features of this 115-125 hp unit are covered as is extra equipment such as hydraulic shiftable moldboard and creeper transmission. Catalog No. 395. The Galion Iron Works & Mfg. Co., Galion, Ohio.

Products catalog—A new edition of Bucyrus-Erie's general catalog (GC-5A), describing the company's line of excavating, drilling and material handling equipment has been released. The 70-page, 2-color book features condensed specifications and over 100 photo illustrations of the company's machines on specific jobs. Several recent additions to the company's line of products are included also. Bucyrus-Erie Co., S. Milwaukee, Wis.

Industrial pumps—Identified as Industrial Catalog I-54, a 108-page illustrated catalog describes practically every industrial pump now made by the company. Contents of the new catalog include information on construction features, performance and selection tables for the complete industrial line of pumps and several pages of information related to liquid materials handling problems. The Deming Co., Salem, Ohio.



No down time in 16 months!

That's the record of this 20-ton Plymouth Diesel owned by Wyatt Metal & Boiler Works, Houston, Texas

This modern Plymouth operates approximately 45 hours a week, hauling, switching and spotting railroad cars in the plant. The operator praises the Plymouth Torqomotive* Drive because it eliminates shifting gears under heavy loads, assures smooth, steady power for peak efficiency, and reduces rough starts and coupling shocks.

"There just isn't anything we have found wrong with our Plymouth," says E. C. Jones, Vice President of Wyatt. "Efficiency in switching has doubled, and we have lost no time due to repairs or maintenance since we purchased the locomotive 16 months ago. It is far above anything we have had experience with."

If you are not enjoying the benefits of "Industry's Smoothest Switchers" write for illustrated catalog of the Plymouth line—models from 3 to 70 ton. Gasoline, Diesel, Diesel-Electric, with mechanical or Torqomotive Drive. PLYMOUTH LOCOMOTIVE WORKS, Division of THE FATE-ROOT-HEATH COMPANY, Dept. A-4, Plymouth, Ohio.

**TORQOMOTIVE DRIVE PLYMOUTH TRANSMISSION WITH HYDRAULIC TORQUE CONVERTER*

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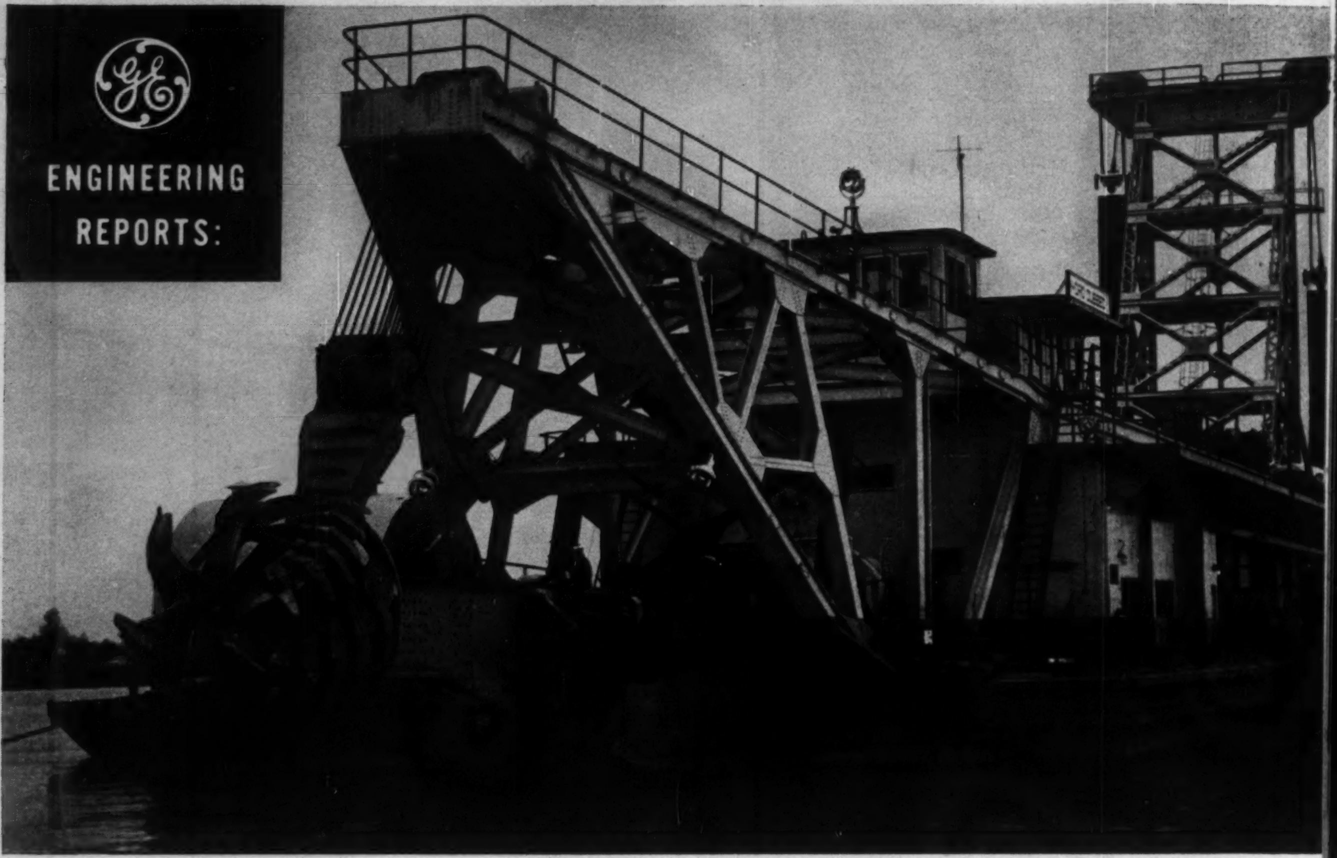
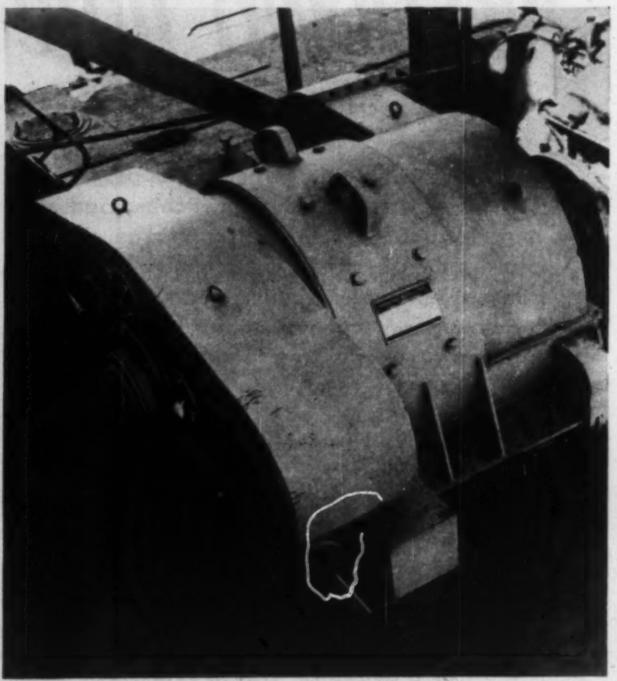


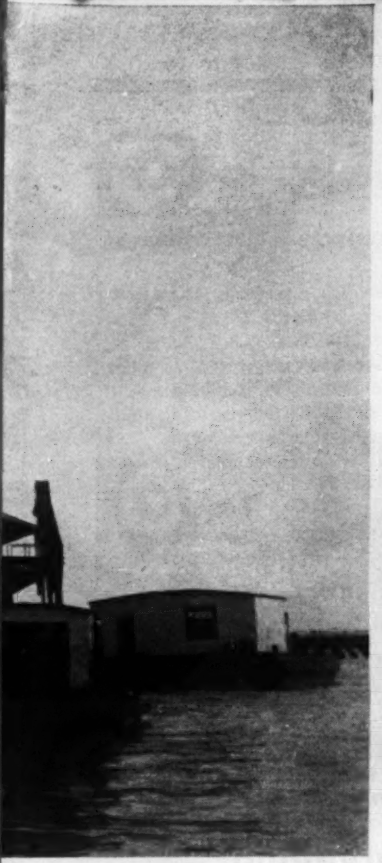
MOVING 1500-POUND BOULDERS with ease, the "Hydro-Québec" will deepen the 3300-foot-wide, 15-mile-long canal to 35 feet.

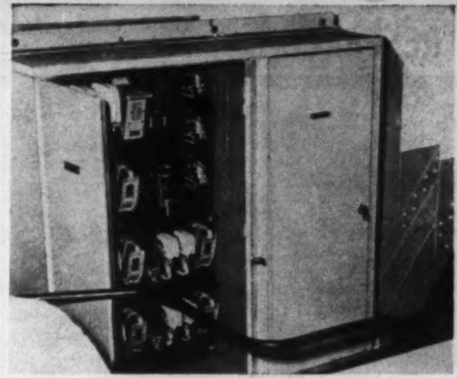
G.E.-powered dredge speeds Beauharnois

STURDY, HEAVY-DUTY induction motor powers pump that sucks up 28-in boulders. Motor was specially designed to absorb severe vibrations, load irregularities and overloads.

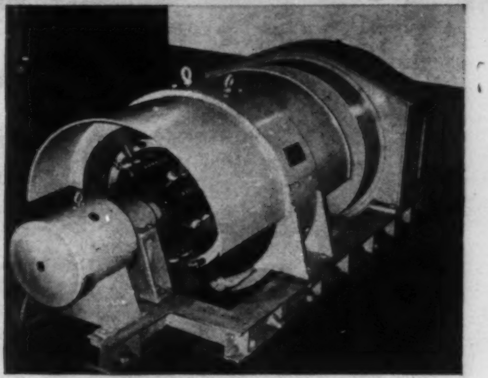


HIGHLY RESPONSIVE, amplidyne-controlled d-c motor drives 35-ton cutter. Ladder mounted and operating up to 45° tilt, it must stand vibration, jarring shocks of cutting operation.

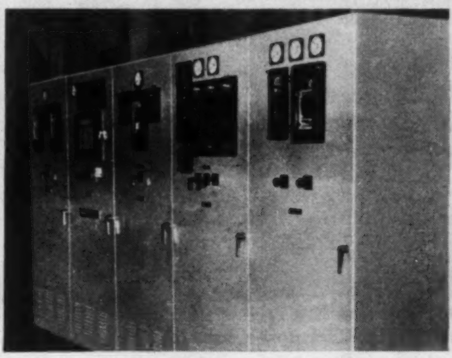




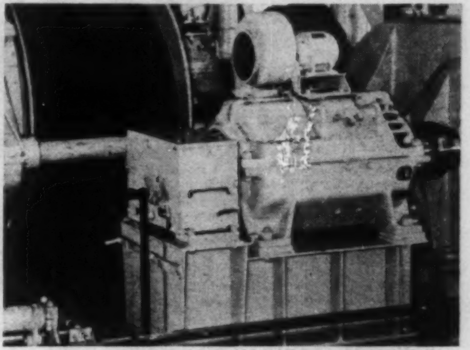
REMOTE CONTROL of dredge's auxiliary motors at centralized location is provided by General Electric remote motor controllers.



EXACT POWER NEEDS of d-c cutter motor are reliably furnished by sturdy, efficient, high-response, General Electric motor-generator set.



DEPENDABLE HIGH-VOLTAGE motor protection is provided by heavy-duty, G-E, metal-clad switchgear with draw-out circuit breakers.



COMPACT, RUGGED armored d-c motors operate ladder hoist and hauling winches, meet strict commutation and overload requirements.

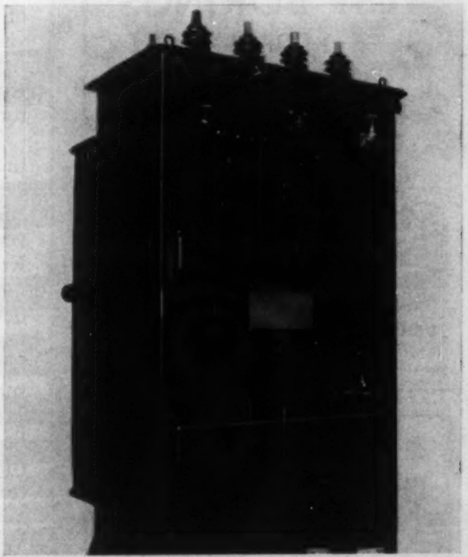
hydro-electric project

Ellicott design uses G-E equipment for more reliable performance on round-the-clock schedule

The "Hydro Québec" will operate 24 hours a day except in winter months clearing the Beauharnois Canal, a diversion of the St. Lawrence River. This project will provide more water for the expanding Quebec Hydro-Electric Commission powerhouse. Ultimately, the canal will serve as a unit of the St. Lawrence Seaway.

Long-life dependability of electrical equipment was essential to the success of the dredge on this demanding schedule. Because of this, Ellicott Machine Corp., Baltimore, Md., the builder, used G-E products in an engineered system to provide the major power components of the vessel. Years of engineering experience and skill were made available by G.E. to the customer and his consulting engineer. G-E application engineers worked closely with them to select the right equipment and combine it into the most economical, highly reliable power system for the dredge.

Productivity of heavy construction tools can be sharply increased by proper electrification. G-E engineers will work with you on design and application of electrical systems for your heavy construction equipment. Contact any G-E Apparatus Sales Office, or write General Electric Co., Section 664-34, Schenectady, N. Y.



RELIABLY SUPPLYING dredge power system, six G-E transformers filled with non-flammable Pyranol* insulating liquid reduce voltage transmitted via cable from shore substation.

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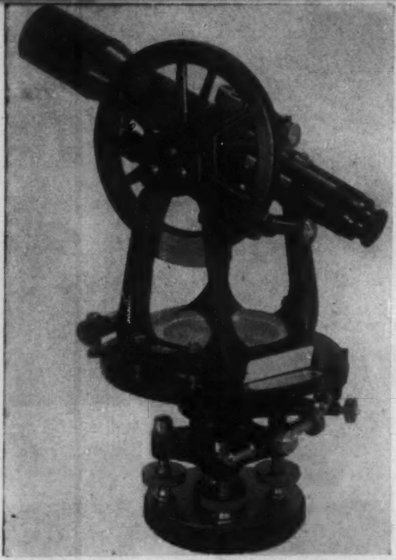
GENERAL ELECTRIC



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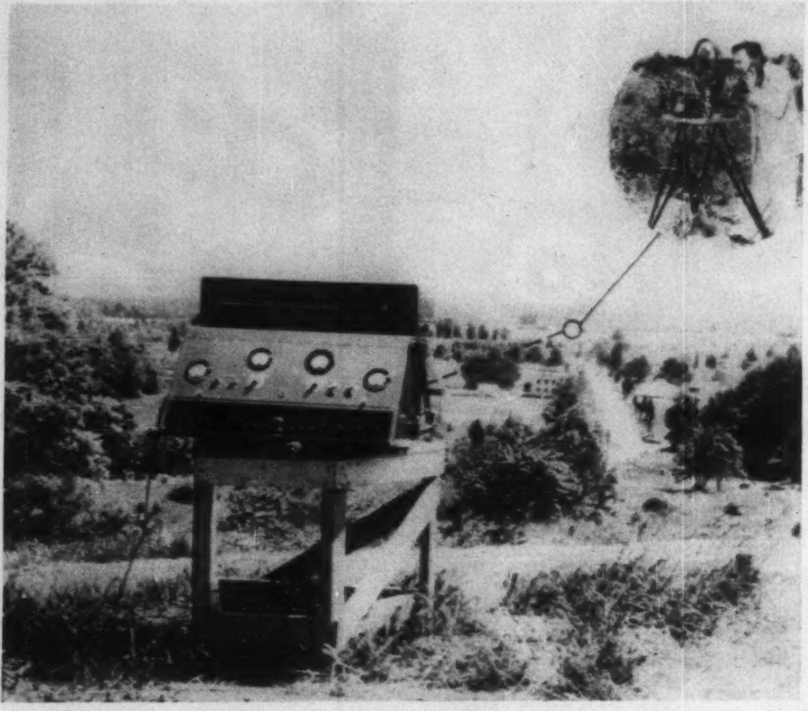

GEODIMETER set up on base line station. Inset shows plane mirror at other end.

Speed of Light Used in Surveying

A precise distance-measuring instrument with an accurate operating range of up to 50 miles under excellent visibility conditions is undergoing rigid tests at the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia.

The geodimeter is an electronic-optical device with which measurements can be made by using a fundamental constant—the velocity of light. Invented by a Swedish geodesist, Dr. Erik Bergstrand, it is designed primarily for the determination of geodetic distances, such as precise lines used in triangulation, but it also can be used under special conditions for surveying by trilateration methods.

Distance measurements are obtained by determining indirectly the time interval for a light beam to travel from the geodimeter to a distant plane mirror and return to the instrument. With the velocity of light already known, distances can be readily computed.

Some preliminary tests on the instrument have already been accomplished through measurements made over special short lines established in cooperation with the U. S. Coast and Geodetic Survey. More rigid procedures were added than normally considered necessary for first-order base line measurements, and these resulted in a probable error of lines of about one part in 1,500,000. Test lines used were short, and since errors are largely constant in short lines and are not proportional to distance, it is believed the accuracies would improve considerably with an increase in the length of the base line.

Two basic units compose the geodimeter, measuring and light conductor units. The measuring unit contains the necessary electronic equipment while the light conductor unit consists of a continuously variable light path which has been precisely determined by calibration measurements in the laboratory and two spherical mirrors approximately 12 in. in dia with necessary optics to project and receive the light beam.

The plane mirror, used at the opposite end of the base line to return the projected light beam to the geodimeter, is equipped with a collimated telescope and vertical and horizontal adjustment mechanisms for precise pointing and plumbing.

Distance measurements can normally be made in two to three hours using a procedure to obtain approximately 16 independent measurements—eight each on the light conductor unit and on the base line. The required computations can be accomplished in some 30 min.

J&L Junior Beams prove economical, adaptable

see our catalog in SWEET'S

at Orgill Brothers $2,000,000 warehouse

Five hundred and fifty tons of J&L Junior Beam roof purlins have been specified for Orgill Brothers new $2,000,000 wholesale hardware warehouse in Memphis, Tenn. Both architect and contractor agree that Junior Beams enabled them to save money on this 14-acre project and complete the job on schedule.

Architects W. C. Jones and W. C. Jones, Jr., chose Junior Beams because their physical characteristics permitted greater economy in design, allowed more head room, better clearance and thus provided a better stabilized building. In addition Junior Beam's light weight made for fast, easy handling during construction, as well as during hauling to the building site.

Clinton J. Wagner, Vice President of S&W Construction Company, contractors on the job, reported that "we found Junior Beams to be adaptable and economical for this type of construction. Deliveries were satisfactory and well ahead of schedule. This was a great factor in enabling us to complete the project on time."

Additional savings were outlined by B. S. Merrill, structural engineer for the architects. He said, "we had 6500 sprinklers to install and the use of Junior Beams effected considerable savings . . . I would estimate we would have had to put in 10 to 20 percent more heads if we had used some other joist and at $20.00 a head you can see what we saved."

Take a tip from the men who built Orgill Brothers Warehouse, Junior Beams are adaptable, rigid, shrinkproof, fire resistant, vermin-proof, and impervious to termites. Write for more information today. Our new booklet, *J&L Junior Beams*, shows how these modern structurals are being used as floor joists and roof purlins, with loading and spacing tables for various spans.

J&L STEEL

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*

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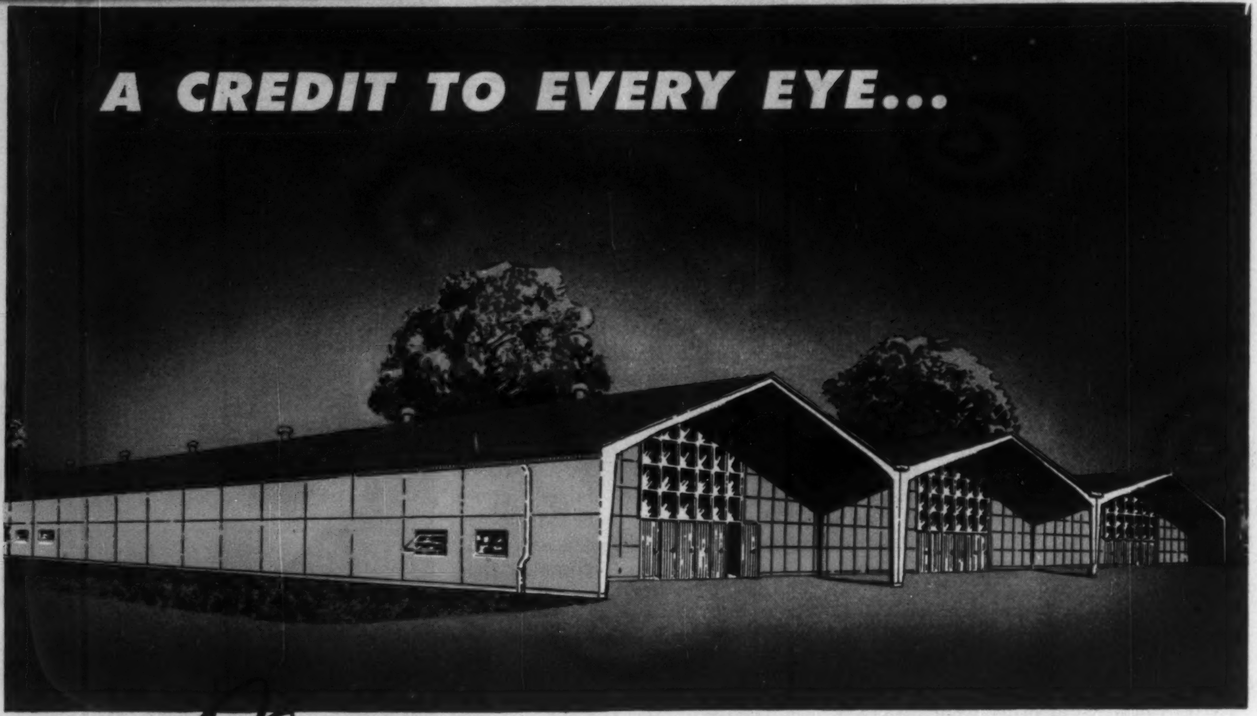

NEW *Marietta* "PANEL-BILT" PACKAGE BUILDINGS with the BEAUTIFUL... "CUSTOM-BUILT" APPEARANCE!

When you invest in a new Marietta "Panel-Bilt" Package Building, there'll be an approving gleam in every eye... from the chairman of the board to the file clerk. You'll please the eye of the passer-by... neighbors... customers... and all your associates.

A "Panel-Bilt" is an amazingly versatile, readily expansible structure that is ideal for the widest variety of industrial uses. Predesigned from standard components by Marietta engineers, it is also a strikingly handsome structure that will be a credit to your company's physical plant; side and end walls are sheathed with Marietta precast insulated concrete panels in modular sizes, broomed to resemble costly Indiana limestone.

A steel frame, of rigid, welded single-beam design, provides extra height and eliminates obstructing columns, allowing larger clear areas of floor space. Metal door and window frames are cast into wall panels to give you free choice in door and window arrangement. Only footers and floor slab need be poured on the site; Marietta precast wall panels and grade beams permit exceptional speed of construction, with all details capably handled by Marietta under a single contract.

Marietta "Panel-Bilt" Package Buildings lend themselves to every conceivable use. A core of rigid insulation is cast into each panel, providing superior insulating qualities which makes the "Panel-Bilt" equally desirable for industrial or office use. Partitions may be quickly installed or removed to convert the structure from one activity to another.

Whether your eyes are on the budget... on the beauty... on permanence or flexibility for the future, from every viewpoint, Marietta "Panel-Bilt" buildings are a credit to every eye. That's why all eyes are on Marietta.

Write today for your booklet which shows how the many advantages of Marietta "Panel-Bilt" construction can speed your building program . . . save you valuable time, and cut construction costs.

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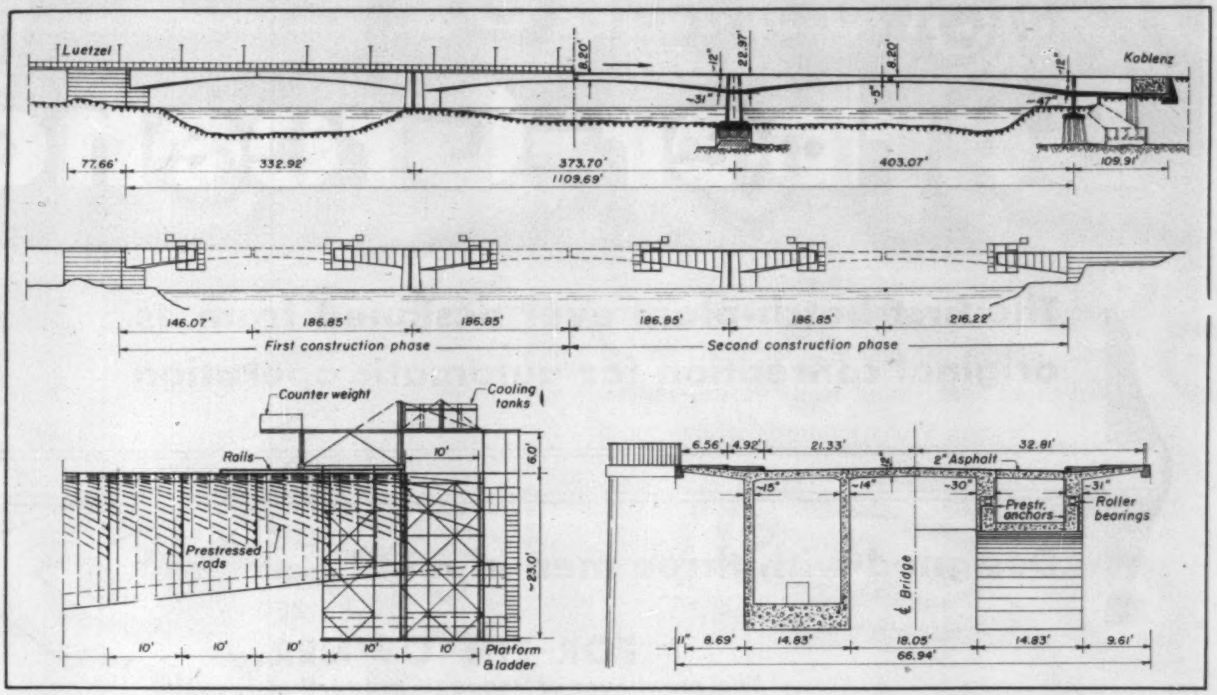


THREE-SPAN continuous bridge of prestressed concrete was erected much as though it were steel construction: without falsework.

Concrete Bridge Erected by Cantilever Method

A. E. Komendant
Consulting Engineer
New York, N. Y.

A new three-span 1,110-ft prestressed concrete bridge over the Moselle River at Coblenz, Germany, is unusual in that it was erected by the cantilever method, without the usual cumbersome falsework. This method, used in conjunction with prestressed concrete, thus far has not been used outside Europe.

Completed last summer, the bridge was built in only seven months.

During erection, the structure consisted of four statically determinate independent cantilevered structures: two cantilevered from abutments, two cantilevered symmetrically from the intermediate piers.

Three movable scaffolds were used—one for the girders cantilevered from the abutments, and two for beams cantilevered symmetrically from the piers. The scaffolds encircled the two girders making up each span (see drawing). After the first phase (consisting of two structures) was finished, the scaffolds were used for the remaining two structures (second phase).

Cantilevers from abutments were held in equilibrium by counterweights inside the abutments. Upon completion of the four separate sections they were connected at the crown point of each span by roller bearings and prestressed anchors. These connections allow lateral movements of the beams, but transmit forces in the vertical direction.

The depth of the beams is 23 ft at piers and abutments and 8 ft 2 in. at the crowns. The cross section of the bridge is formed of two box girders connected by the roadway slab, and with cantilevered walkways on either side. Total width of the bridge is 67 ft. The box girders are provided with diaphragms at the piers, abutments, and crowns only.

• **Prestressed with rods**—The cantilevered girders are prestressed with 1-in. dia rods of 85,000 psi proof stress and 128,000 psi ultimate strength prestressed to 60,000 psi. In plan view, prestressing rods are distributed uniformly over the total width of the bridge at abutments and piers. Following the decrease of moment toward the crown of the span, the rods are decreased and concentrated in the walls of the girders.

Since concrete for the girders was placed in about 10-ft long sections, a number of rods, dependent on the decrease in moment, were prestressed in the walls at the end of each finished section. The remainder of the rods were prestressed after a varying number of further sections were placed (see lower left hand corner of drawing).

In longitudinal section, the rods follow the direction of tensile stresses in the walls. The 20-ft rods are threaded at the ends, so that at each end of a finished section, half of the rods pass through to further sections, and may be lengthened by attaching other rods with turnbuckles.

Girder walls are vertically prestressed by rods at varying intervals: 12 in. at supports and 36 in. at crown. The walls are also reinforced with welded wire fabric. The roadway slab is transversely prestressed with standard 1-in. dia rods prestressed to 68,000 psi. In addition to the prestressing bars, the slab is reinforced with conventional reinforcing in longitudinal and transverse directions.

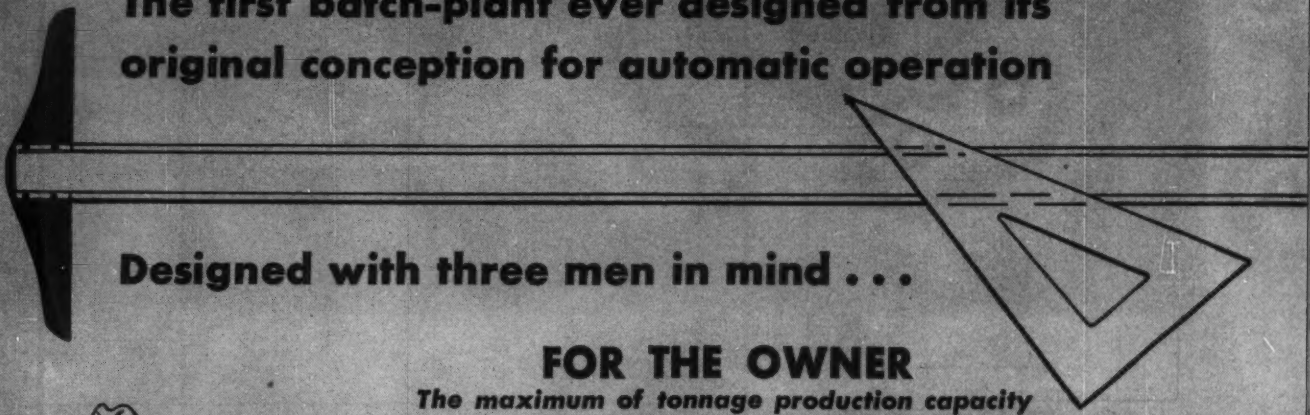
Stresses set up in the concrete, due to prestressing and dead load before

(*Continued on page 81*)

introducing the

Barber-Greene

The first batch-plant ever designed from its original conception for automatic operation



Designed with three men in mind . . .

FOR THE OWNER

The maximum of tonnage production capacity

ALL SIZES OF AGGREGATE, INCLUDING THE MINERAL FILLER, ARE WEIGHED SIMULTANEOUSLY. Total weighing time for all ingredients is considerably less than the shortest mixing time in any specification. The only limit on hourly production is the specified mixing time. The completely new pugmill principle gives *thorough coating in less time than any other pugmill manufactured today.* When a minimum mixing time is *not* specified, complete coating can be obtained and the tonnage output increased to far above the production of plants of comparable pugmill capacity. Virtually no time lost in discharging. Full-opening bottom gives instantaneous discharge without segregation.

The maximum of flexibility

The plant may be "preset" for all-day production of the same mix in repetitive cycles, and *instantly* switched for a new mix for the "drive-in" customer. *Sooner than the next truck can drive under,* the plant is back to its preset proportions and in repetitive cycle operation again.

FOR THE OPERATOR

A new ease and simplicity of operation

Automatic Operation. With the proportions preset, the operator locks in the "cycle" button when a truck drives under. The plant then automatically goes through complete cycles, *including discharging to the truck.* If he merely pushes the automatic button (without locking it), the plant goes through the complete cycle up to the point of discharging.

Manual Operation. For individual loads or other "drive-in" trade, the operator instantly disengages the preset combinations and weighs out each size of aggregate in ordinary batch-plant fashion. Operating one valve resets the preset proportions.

Using preset proportions, the operator can manually weigh the materials by either operating one valve to *WEIGH ALL SIZES SIMULTANEOUSLY,* or operating the individual bin valves to weigh each size separately. In either of these cases, *no skill or judgment is required for accuracy.* The preset combinations control the proper weight.

FOR THE INSPECTOR

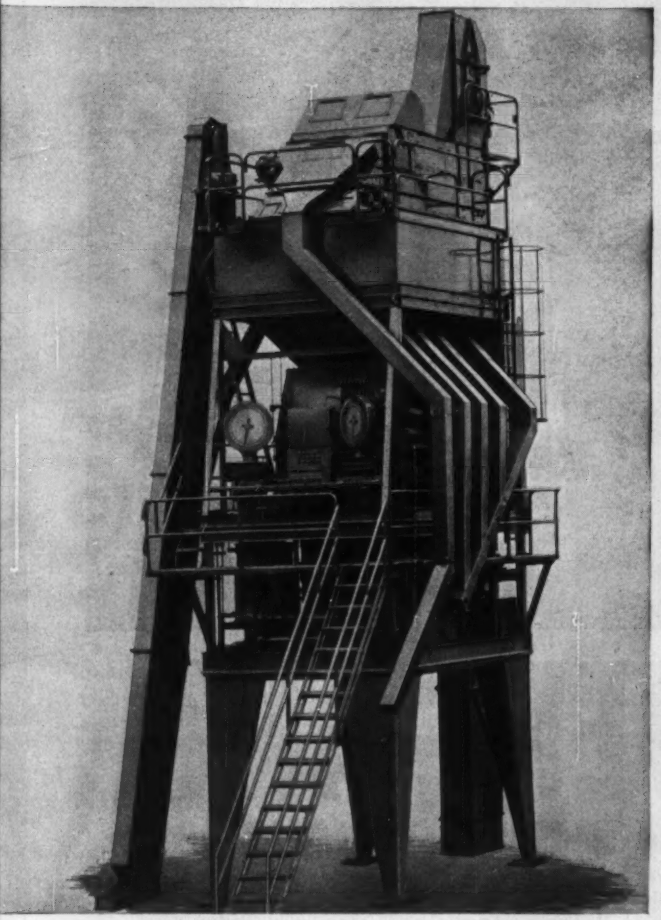
At any time, the inspector can quickly check the *weight* of the *asphalt,* the *weight* of each *size of aggregate,* the *weight* of the *mineral filler,* or the *weight* of the *total aggregate.*

The plant *automatically extracts a true cross-sectional sample* of the aggregate in each bin as part of its regular operating cycle. Normally this sample is fed into the next batch, but at any time the inspector can remove this sample for a gradation check. The plant can be set so that the cycle will be interrupted if there is any variation from the preset proportions.

BITUMINOUS

Batch Plant

890 series



Automatic Controls

The electric controls are simple 110-volt A.C. circuits. There are *no* electronic devices. The automatic measuring itself is *not* dependent on the electrical controls. If for any reason the operator wishes or needs to operate without the electrical controls, he may do so, and no skill or judgment is required.

Here is the most revolutionary development in the field of bituminous paving since Barber-Greene introduced the continuous plant over a quarter century ago.

When continuous type?
When batch type?

The superior performance of the new Barber-Greene Batch-Plant is *not* reason for switching to batch-plants in applications where a continuous-type plant will serve.

No batch-plant, not even the new Barber-Greene, can compete with the continuous plant for highway work, or any application where high tonnage production and portability are important factors.

The basic advantages of the continuous principle continue to exist, and the continuous plant should and will continue to be the most popular.

However, where the batch principle is preferred, primarily for the purpose of serving frequent "drive-in" trade, requiring different mixes during the day, Barber-Greene now offers the outstanding batch-plant of the field.

For years, Barber-Greene has produced more asphalt plants than all others combined. We continue to offer the most comprehensive line of bituminous equipment of any manufacturer.

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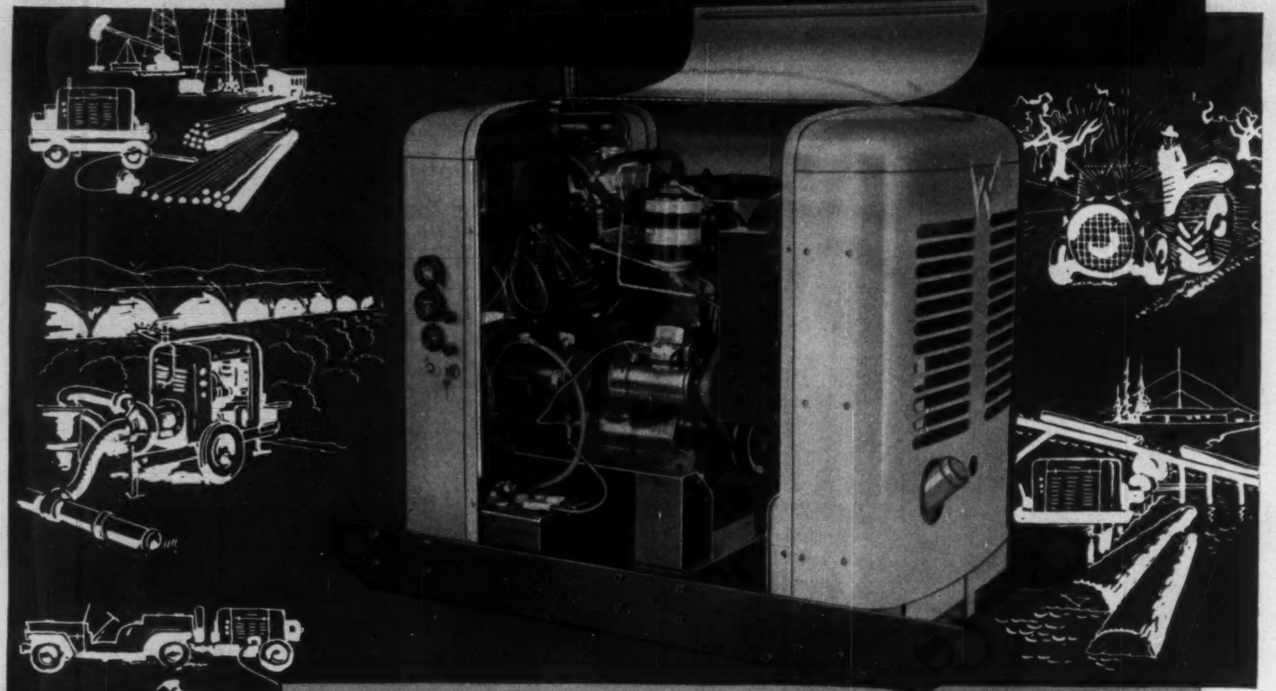

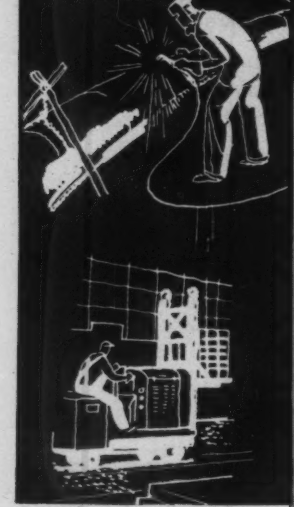

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shrinkage and plastic flow have taken place, were computed to be 540 psi at the top fiber and 1410 psi at the bottom fiber of the girder. The specified 28 days ultimate cylinder strength of concrete for girders was 4,800 psi.

The losses in prestressing rods, due to shrinkage and plastic flow, for assumed shrinkage value -15×10^{-5} and ratio of plastic to elastic strain of 2.0 (in accordance with the elastic and plastic theory), were computed to be 10,700 psi for girders and 7,800 psi for transverse prestressing of the slab.

The maximum final stresses in the girders, due to prestressing, dead and live load, were computed to be 61,400 psi in steel, and concrete: +230 psi tensile stress at the top fiber and −1,860 psi at the bottom fiber.

• **Scaffolding**—The three movable scaffolds were built up of pipes and beams and mounted on rails. The scaffolds were designed to support both fresh concrete, working platforms and forms. They cantilevered about 13 ft from the adjoining section. To provide stability, the movable scaffolds had counter-weights on their ends.

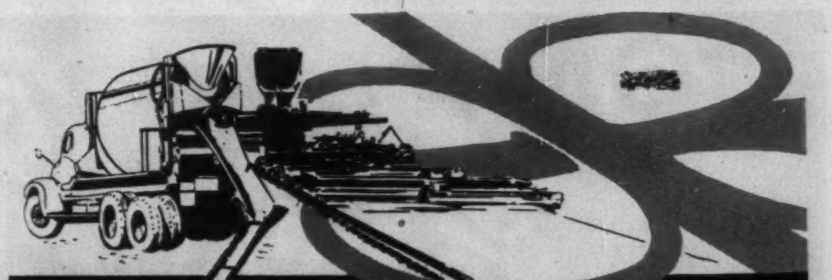
For sections close to the piers and abutments, up to 2,500 cu ft of concrete had to be placed in a short period of time at high atmospheric temperature. Therefore, elimination of part of the chemical heat in the concrete was required to avoid cracks. In these areas the scaffolds had also to support the cooling tanks required to control the heat. The exact elevation of the scaffolding was hydraulically regulated.

• **Prestressing**—Three days were required for construction of one section (10 ft). The first prestressing was applied 24 hours after placing concrete. This was mainly possible by using high-early strength cement and vibration. The ultimate cylinder strength of 24 hours varied from about 3,000 to 3,600 psi, and at 28 days was found to be more than 6,400 psi.

The amounts of materials required for the superstructure, computed per sq ft of bridge area, were: concrete, 3.1 cu ft; prestressing rods, 16 lb; structural grade reinforcing steel, 5.9 lb.

The Moselle bridge was designed by the construction firm of Dyckerhoff-Widman, which was also in charge of superstructure erection. The cantilever method of erection has been developed under the leadership of Dr. Finsterwalder by Dyckerhoff-Widman and has been used for many bridges constructed in recent years.

(*International continued on page 82*)



for sizing accuracy

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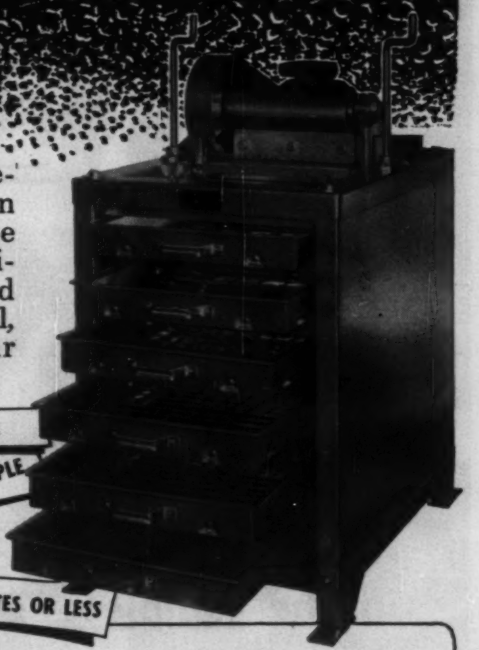

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MAKES TEST IN 5-MINUTES OR LESS

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8. Size range 4" to 200-mesh

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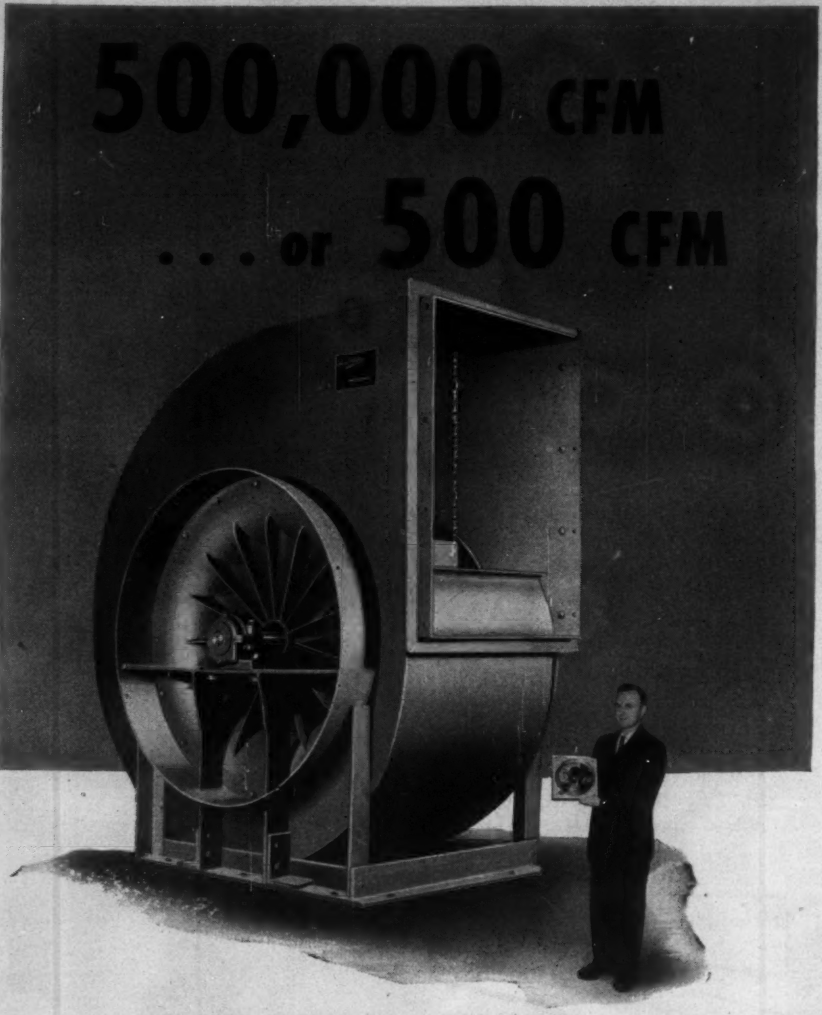
TITLE or POSITION

Please send me further descriptive and price information on the GILSON Mechanical Testing Screen.



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Litani Projects Attract Foreign Engineering Firms

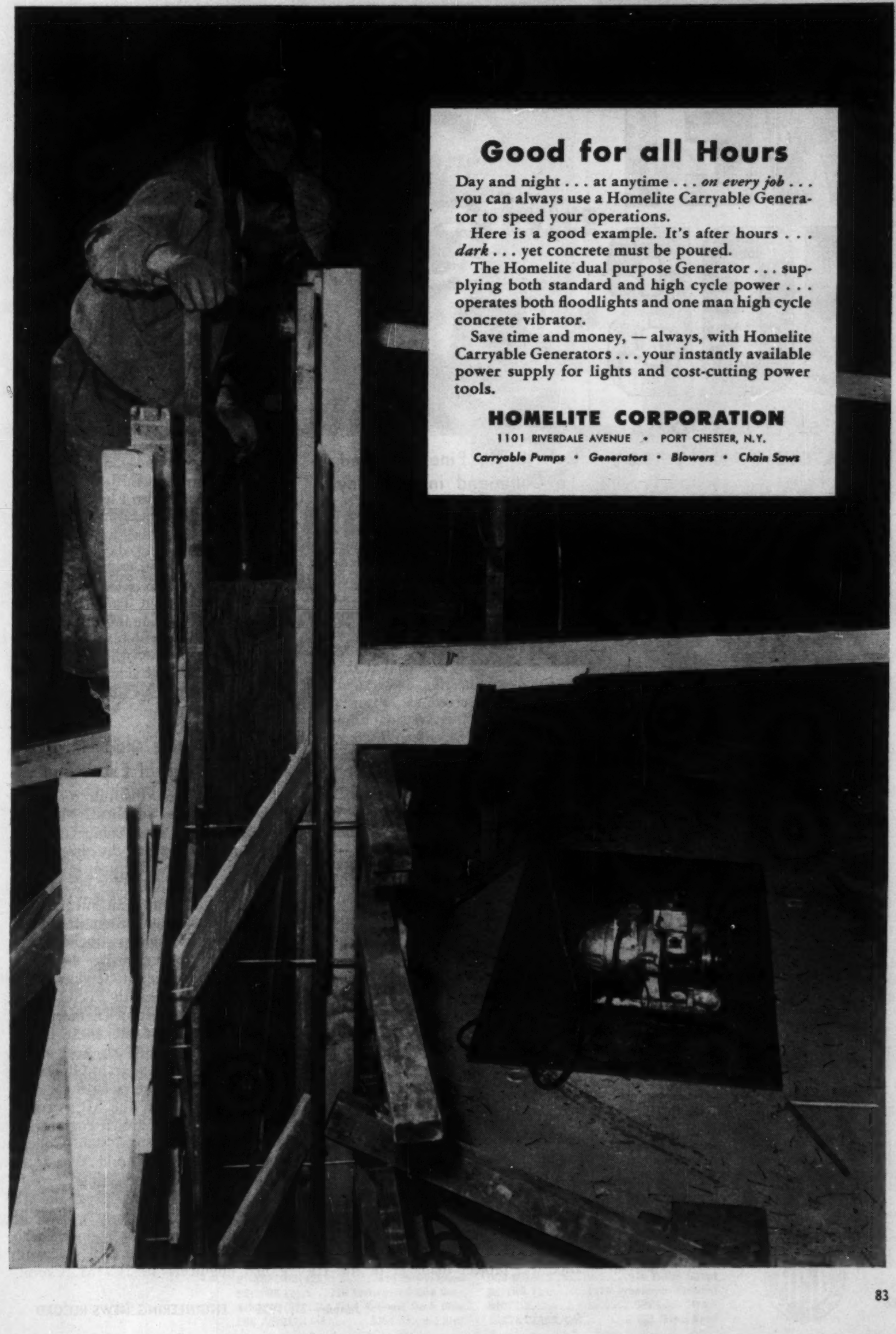
The Lebanese Government has released the names of 54 foreign engineering firms which have submitted proposals for the first part of the Litani River hydroelectric projects. Fourteen companies of the U.S.A. have submitted their qualifications. The firms are: Parsons, Brinckerhoff, Hall & MacDonald; Chas. T. Main; Gannett, Fleming, Corddry & Carpenter; Kuljian Corp.; Parsons & Harza; Theodor Kauffield; Sverdrup & Parcel; Daniel Man; White Engineering Co.; Knappen-Tippetts-Abbett-McCarthy; Foley Brothers; Ambursen Engineering Corp; Michael Baker; Burns & Roe. Of the rest, 5 companies are of Italy, 8 companies of France, 3 from Yugoslavia, 4 of Great Britain, 3 of Germany, 1 of Spain, 2 of Denmark, 1 of Sweden, 4 of Switzerland, 1 of Netherlands and 1 of Norway.

International Briefs . . .

- **Tunnel proposed**—A tunnel crossing of Venezuela's fabulous oil-rich Lake Maracaibo has been proposed to the Venezuelan Government, which had recently been decided to build a reported $40-million 6-mile bridge across the lake. A group of American construction companies have come up with the alternate plan to build a tunnel between Maracaibo and Palmerejo. The Walter Gahagan Construction Co. is a member of the American group.

- **Colombian power plan**—A 16-year, $1-billion development of electrical power installations is being considered by the Colombian Government. Although the need for more power is acute, the financing of the plan will be a long process. Part of the $1-billion investment is expected to come from the World Bank, part from the Export-Import Bank, and part from private banks.

- **New city plan**—Preliminary plans for Bogota's new Government City on the western border of the present capital have been submitted to Colombia's president. To cost around $24 million, the new city will relieve congestion in downtown Bogota, and concentrate all government activities, by removing all government offices to the outskirts. The 350 acres for the development are being leveled now in preparation for construction. Part of the financing will be by sale and renting of present government buildings.



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MEN AND JOBS

Col. L. W. Pine Assigned To Command in Germany

Col. Lynn W. Pine has assumed command of the 24th Engineer Group, formerly the 311th Engineer Group, at Kaiserslautern, Germany. He was transferred from the General Staff, U. S. Army, Washington, D. C.

His association with the Corps of Engineers dates back to 1931 when he received his first commission. During and since World War II, Col. Pine had engineering assignments in Panama, and served as commanding officer of the First Aviation Engineer Unit Training Center, Richmond, Va., and as senior engineer instructor at the Command and General Staff School, Ft. Leavenworth, Kans. He was later with the Far East Command as Corps Engineer, 9th Corps, Sandai, Japan.

Col. Pine is a civil engineering graduate of the University of Illinois.

Consultants Appointed For St. Lawrence Seaway

The St. Lawrence Seaway Development Corporation has established a Board of Engineering Consultants to assist in the development of the seaway project. Members of the new board are:

- Clarence E. Blee, chief engineer of TVA, who will be responsible for consultation on deep-draft navigation channel construction. He is a civil engineering graduate of Stanford University and has been active for over 40 years in the development of various public and private power projects both here and in Canada. During the earlier phases of his 20-year service with TVA, Blee was project manager of the Hiwassee, Ft. Loudoun and Fontana hydro electric projects.
- Frank W. Edwards, hydraulic engineering specialist and member of the staff of Stanley Engineering Co., Muscatine, Iowa. He has been closely associated with hydraulic research and design of flood control structures in Los Angeles, New Orleans and Zanesville, Ohio, and has served as chief of the hydraulic section on Third Locks design, Panama Canal. His most recent of several teaching posts was at Illinois Institute of Technology where he headed up the department of civil engineering.
- Edward M. Fucik, construction engineer, soils expert and vice president of Harza Engineering Co., Chicago. A civil engineering graduate of Princeton, with a master's degree from Harvard, he designed and supervised the construction of earth dams in the Santee-Cooper Hydro Electric Project, Moncks Corner, S. C., and had charge of the Soil Mechanics Section of the Third Locks Project on the Panama Canal.
- Charles M. Wellons, consulting engineer, Pittsburgh, Pa. His long association with private industry and the Corps of Engineers has included construction of electric utilities and government locks and dams. He is an engineering graduate of Ohio State University.

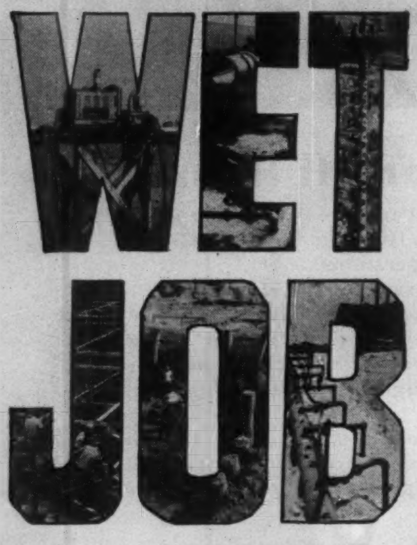
AISC Promotes Mace H. Bell In Departmental Expansion

The American Institute of Steel Construction has appointed Mace H. Bell chief of district engineers. Bell has been assistant to the director of engineering and will remain in AISC's New York City office.

His appointment is an integral part of the expansion and reorganization of AISC's engineering department to provide more comprehensive assistance to those who utilize its services.

Bell has been with AISC since 1936, serving as district engineer, first in New Orleans and later in St. Louis, before coming to the New York office. Earlier associations were in Ohio with the Corps of Engineers on flood control work and with the Mt. Vernon Bridge Co. Bell is a civil engineering graduate of Mississippi State College and served during World War II in the Navy's Civil Engineering Corps.

Under AISC's new plan, the 18 district and field engineers will report to one of five regional engineers who will be responsible to Bell. New regional engineers are: C. M. Corbit,



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100,000-gallon P-DM dual service elevated steel tank at Hartford Special Machinery Co., Simsburg, Conn.

Combining 25,000 gallons of water storage for regular use with a fixed reserve of 75,000 gallons for sprinkler demand, this 100,000-gallon Pittsburgh-Des Moines Double-Ellipsoidal Elevated Steel Tank is of a type and size widely favored by industrial plants, hospitals, institutions and smaller communities.

The tank and its 100-foot tubular column tower are of welded construction. The pleasing appearance of the unit results from balanced, functional design; it is standardized throughout for maximum dollar value to the purchaser.

Write for our complete Elevated Tank Catalog, free on request.

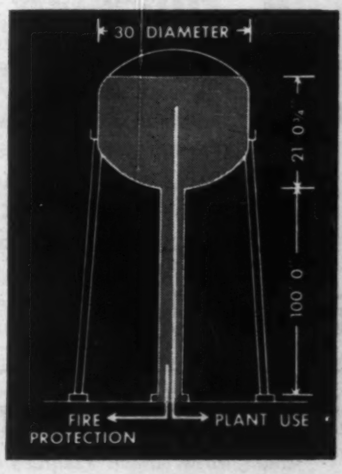

Diagram illustrates plant-use storage down to 75,000 gallon level. Balance of tank and riser capacity reserved for fire protection only, supplying automatic sprinkler system.

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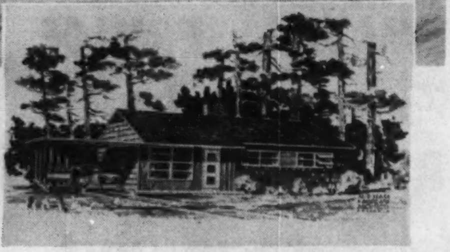

Knox Corp., Thomson, Ga., uses TECO trussed rafters in air-conditioned "Weathermaker Homes".

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MEN AND JOBS

Los Angeles; R. B. Reilly, Dallas; H. J. Stetina, Philadelphia; A. L. Small, Chicago; and A. R. Wright, Atlanta.

In the reorganization, T. R. Higgins, director of engineering since 1945, was named director of engineering and research.

Merritt-Chapman & Scott Elects a New Director

Charles A. Pitts, Toronto, Canada, has been elected a director of Merritt-Chapman & Scott Corporation, New York. He fills one of three vacancies created by the recent increase in board membership from 12 to 15.

Pitts is president of C. A. Pitts General Contractor Ltd., Toronto-based company formed by Pitts in 1942 and acquired last year by M-C & S as a subsidiary.

The new director has been active in the construction field since his graduation in 1930 from St. Paul's College, Winnipeg.

New Executives Appointed By Ford, Bacon & Davis

Charles C. Whittelsey has been appointed executive vice president of Ford, Bacon & Davis, Inc., engineers-constructors, with offices in New York, Chicago, Los Angeles, Monroe, La., and Toronto. He was formerly in charge of the firm's construction activities and will continue as executive vice president of Ford, Bacon & Davis Construction Corp., a subsidiary in Monroe.

Whittelsey joined the firm in 1926 and has been particularly active in the company's oil and gas work, which includes many of the major pipe line projects here and in Canada.

At the same time, William B. Poor was appointed vice president and manager of the company's construction department, and a director of both the firm and the Construction Corporation. Prior to joining the firm in 1948, he was chief engineer of Tennessee Gas Transmission Co.

Highway Research Board Appoints New Engineer

The Highway Research Board, Washington, D. C., has appointed Ray E. Bollen staff engineer with the title of "Engineer of Materials, Construction and Maintenance." He succeeds Elmer M. Ward, now assistant director of the board.

In his new job, Bollen will assist in the formulation of projects for investigation and will cooperate with various committees in solving highway prob-

No costly maintenance problem here

Neither process fumes from within, nor salt air and extreme weather will affect the Johns-Manville Corrugated Transite exterior of this recovery furnace building (partial view of St. Regis Paper Co., Jacksonville, Fla.). It requires no paint or special treatment to preserve it, yet it will give years of maintenance-free service.

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For permanent, maintenance-free construction, plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing . . . permit fast economical construction of maintenance-free industrial, commercial, institutional and agricultural buildings.

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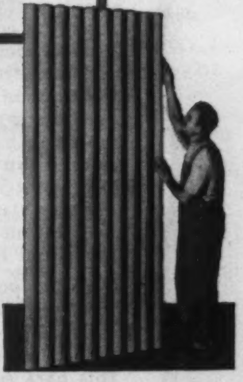
Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, long-lasting, trouble-free structure regardless of size or purpose. For complete details write Johns-Manville, Box 158, Dept. FM, New York 16, New York. In Canada write 199 Bay St., Toronto, Ontario.



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THESE REMOTE CONTROLS WILL DO THEIR JOB UNFAILINGLY, UNDER THE TOUGHEST OPERATING CONDITIONS

Engineers for 30 leading manufacturers told us why their construction equipment performs better for users with TRU-LAY PUSH-PULL REMOTE CONTROLS.

These engineers have adopted TRU-LAY PUSH-PULLS on a wide range of equipment (power shovels, excavators, winches, graders, road oilers, dump trucks, engine driven pumps, crushing plants, snow plows, etc.) for the Remote Control of Transmissions, Hydraulic and Air Valves, Brakes, Clutches, Throttles, Chokes, Governors, Power Take-Offs, Feed and Delivery Conveyors and other applications.

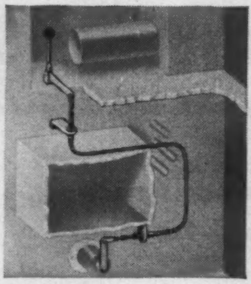
The net of what these engineers had to say collectively was this: These FLEXIBLE PUSH-PULLS make possible More Efficient Design . . . Dependable Operation of controls under the most adverse conditions (Hot as jet engines—Cold to −70° F.—Soakin' Wet—Abrasive—or just plain Tough) . . . Accurate, Precise Control . . . virtual Elimination of Maintenance.

LONG LIFE is a matter of record. We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action controls.

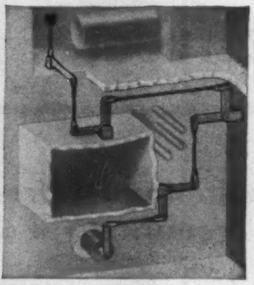
FREEDOM FROM TROUBLE is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the inner, working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

ACCURACY is inherent in the basic design of these TRU-LAY PUSH-PULL REMOTE CONTROLS. They are precision products, not gadgets. They are effective over long or short distances . . . for light loads or loads up to 1,000 lbs., and these units are frequently and successfully used in conjunction with Hydraulic, Air and Electric Controls.

to give you this simple and effective assembly



. . . rather than this complex (and expensive) series of linkages



"SOLID as a rod but FLEXIBLE as a wire rope" is a good description of TRU-LAY PUSH-PULL CONTROLS. This flexibility provides positive remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration, and greatly simplifies installation of controls by reducing the number of working parts and by making it possible to snake around obstructions.

Whether your interest is in a single application of this versatile and dependable PUSH-PULL CONTROL, or in its inclusion as a component of the product you manufacture, the six bulletins and booklets in this DATA FILE will answer your further questions. They will also provide you with the means of defining to us the application you may be interested in.

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lems. Much of his time will be devoted to highway research and development conducted by state highway departments, colleges and universities and other research agencies.

Bollen came to the board from the Nebraska Department of Roads and Irrigation where he had served as testing engineer since 1942. He joined the Nebraska department in 1930, shortly after receiving his civil engineering degree from the University of Nebraska.

Men and Jobs Briefs . . .

• **Careers**—**Martin W. Oettersagen,** deputy administrator of the St. Lawrence Seaway Development Corp., opens his office in Buffalo . . . **Bernard L. Werner** becomes water engineer for Baltimore, succeeding **Joseph S. Strohmeyer** who retires after 47 years of service . . . **Joseph J. Lawler** is appointed Secretary of Highways for Pennsylvania.

• **Associations**—New president of the AGC of Missouri is **Dale Maxwell** . . . **William Gillett,** vice president of Detroit Steel Products Co., takes over presidency of the Producers' Council from **Elliott Spratt** . . . **H. A. Schirmer** becomes president of the Structural Engineers Association of Northern California . . . **John R. Montaque,** engineering director of Ontario Hydro-Electric Power Commission, is elected president of the Association of Professional Engineers of Ontario.

• **Business**—H. K. Ferguson Co. elects **Robert R. Cutler** and **C. J. Haglund** vice presidents. Cutler becomes manager of the Central District and Hagland manager of the Western District . . . **Warren Hunter** becomes construction division manager of Fisher Contracting Co. with **Carlton Robb** succeeding him as chief engineer . . . **Clarence H. Ax,** new vice president of Vollmar Bros. Construction Co., St. Louis, will have charge of building construction.

Franklin C. MacKrell, vice president of Stone & Webster Engineering Corp., is appointed district manager in charge of the Chicago office . . . **David Hendrickson** joins The Hinchman Corp., Detroit engineers, after serving as senior engineer, East Bay Municipal Utility District, Oakland, Calif.

• **Retired**—**I. Curtiss Parker** from the Seattle engineering firm of Parker, Hill & Ingman . . . **Louis J. Newburg** as vice president of Gahagan Construction Corp., N. Y.

NEW

INTERNATIONAL 60,000 GVW 6-WHEELER

With New 212 hp. Royal Red Diamond Engine

GENERAL EXCAVATING

There's a new model in the INTERNATIONAL line of 6-wheelers — a model with the power to haul capacity loads over the roughest terrain — a model built to absorb severe loading shocks, and with ability to move heavy loads long distances over-the-road at maximum safe speeds.

The new RF-230 is powered by the new INTERNATIONAL 212 hp. Royal Red Diamond 501 engine delivering 444 lb-ft torque at 1600 rpm. It has hydraulic full-power steering, 12-volt electrical system, other features. Engine and all components are precisely coordinated to assure maximum operating economy, minimum maintenance and long life.

This newest INTERNATIONAL is Tough-Job engineered like all INTERNATIONALS — has a surpassing measure of the performance, strength and stamina qualities that have made INTERNATIONAL the 6-wheel sales leader for 20 straight years. It is built to do big jobs, save big money. Get full facts from your INTERNATIONAL Dealer or Branch.

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GVW rating, 60,000 lbs.

Wheelbase, 175 inches; optional wheelbases available.

Engine, INTERNATIONAL Royal Red Diamond 501, 4½-inch bore, 5¼-inch stroke, 501 cu. in. displacement. Max. hp., 212 at 3000 rpm. Max. torque, 444 lb-ft at 1600 rpm.

Frame, double, heat-treated alloy steel. Two 15,000 lb. capacity front tow hooks, standard.

Clutch, 15-inch single plate with vibration damper.

Transmission, direct-in-fifth main plus overdrive auxiliary.

Standard equipment includes hydraulic full-power steering, air brakes, 12-volt electrical system.

Optional equipment includes LPG fuel system, Comfo-Vision space saver cab for maximum front axle loading; high altitude engine equipment; tinted safety glass all around.

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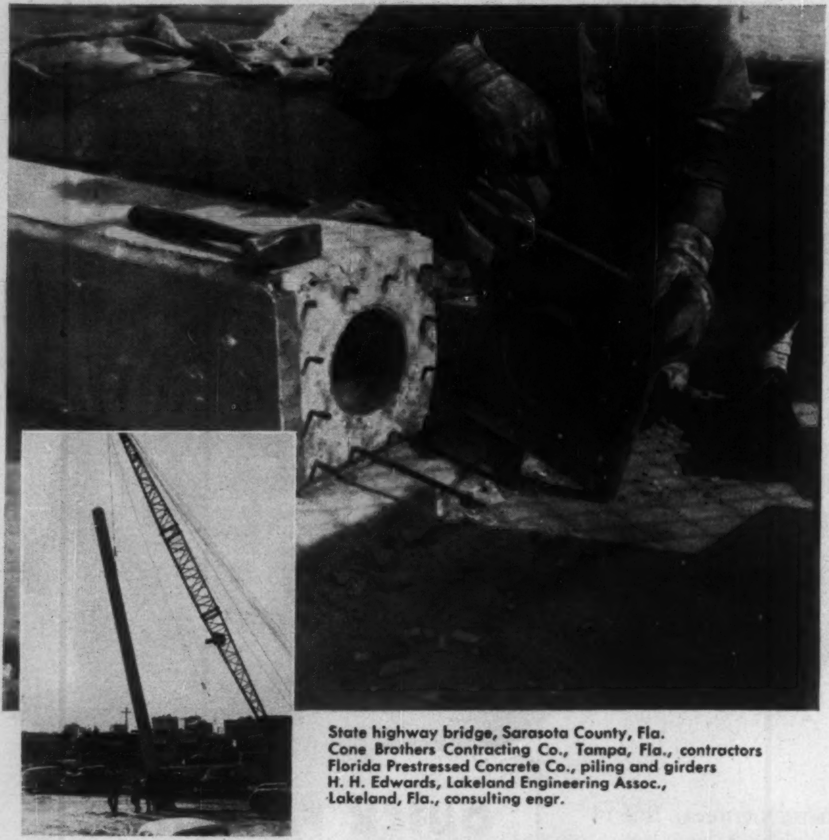

State highway bridge, Sarasota County, Fla.
Cone Brothers Contracting Co., Tampa, Fla., contractors
Florida Prestressed Concrete Co., piling and girders
H. H. Edwards, Lakeland Engineering Assoc.,
Lakeland, Fla., consulting engr.

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. . . low cost SONOVOIDS make it possible.

These prestressed precast concrete piles for the Sarasota County, Fla. bridge are lighter in weight and handle easier because SONOVOIDS were used to displace concrete. The bridge was designed by State Roads Dept. of Fla., W. E. Dean, Chief Engineer of Bridges.

The square 12" x 12" piles have hollow cores formed by 6" O.D. SONOVOIDS. Lengths vary from 35 to 42 feet. Each pile contains twelve 5/16 S. R. grade Roebling Cables with a total stress of 126,000 lbs.

For any concrete unit, precast or cast in place, SONOVOIDS save concrete and reinforcing steel without impairment of structural strength. SONOVOID Fibre Tubes are easy to handle and economical to use.

Available in specified lengths up to 50′ long or sawed to your requirements on the job. Sizes 2" to 36.9" O.D.

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BOOKS

About Two Engineers

BILLINGS AND WATER POWER IN BRAZIL: A Short Biography of Asa White Kenny Billings—By Adolph J. Ackerman. 129 pp. Published by the author and the American Society of Civil Engineers, 33 West 39th St., New York 18, N. Y. $7.00.

THE LIFE AND TIMES OF A HAPPY LIBERAL: A Biography of Morris Llewellyn Cooke—By Kenneth E. Trombley. 270 pp. Harper & Brothers, 49 East 33rd St., New York 16, N. Y. $4.00.

It would be hard to find two better examples of the diversity of types of work in which engineers make careers for themselves than can be found in these two biographies, one about A. W. K. Billings, whose engineering genius gave Brazil its great hydroelectric power system, and the other about Morris Llewellyn Cooke, whose crusading spirit carried him into a wide variety of public service. Yet both had one thing in common, a deep-seated desire to see that the public interest should take precedence over private gain.

A. W. K. Billings is best known for his organizing ability, which made possible the construction of Brazil's spectacular water-power developments. But he also made notable contributions to technical progress in both dam design and hydroelectric power, beginning with his use of artificial sand to produce better concrete for Medina Dam in Texas back in 1911. That work and his little-known work in Spain before going to Brazil all form part of an impressive life history that Adolph Ackerman has put together with unusual skill.

There is little about engineering in Kenneth Trombley's book about Morris L. Cooke, although Cooke has played no small part in stimulating the application of scientific management to American business.

The Cooke biography is an account of how young Cooke found himself suddenly projected into Philadelphia politics by being appointed Director of Public Works in that city, of how in that capacity he successfully fought the politically powerful Philadelphia Electric Co. to obtain rate reductions, and of how that fight led him to openly criticize such famous engineering authorities on utility valuation as George F. Swain and Dugald C. Jackson. The latter led to an abortive attempt to have Cooke disciplined by the ASME for violating the society's code of ethics.

Because of the stand taken by

Cooke on utility regulation, Franklin D. Roosevelt, then Governor of New York, in 1931, named him to membership on the newly created Power Authority of the State of New York. That led to a friendship which resulted in numerous special assignments for Mr. Cooke after Roosevelt went to Washington as President, including that of being the first administrator of the Rural Electrification Administration.

In all these assignments, Cooke maintained the same crusading spirit that marked his youthful fights with Philadelphia politicians.

Miscellaneous Notes

- **Underground Openings for Defense,** a publication of the Colorado School of Mines that has been out of print for some time, has been reissued. It is Vol. 46, No. 1 of Quarterly of the school and can be obtained from the Department of Publications, Golden, Colo., for $3.00.

- A specification for the design and fabrication of pretensioned concrete products has been published by the Prestressed Concrete Institute, P. O. Box 495, Lakeland, Fla., an organization of prestressed concrete manufacturers. According to Henry H. Edwards, secretary-treasurer, eight firms now are turning out products in compliance with the specification.

Miscellaneous Notes

CONVEYORS AND RELATED EQUIPMENT—By Wilbur G. Hudson, 524 pp. Third Edition. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $9.00

ABBOTT'S NATIONAL ELECTRICAL CODE HANDBOOK—8th Edition. Revised by National Fire Protection Association, 642 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.50

THE VERTICAL PUMP BY JOHNSTON—By A. W. Moore and Howard Sens, 392 pp. Johnston Pump Company, Pasadena, California. $10.00

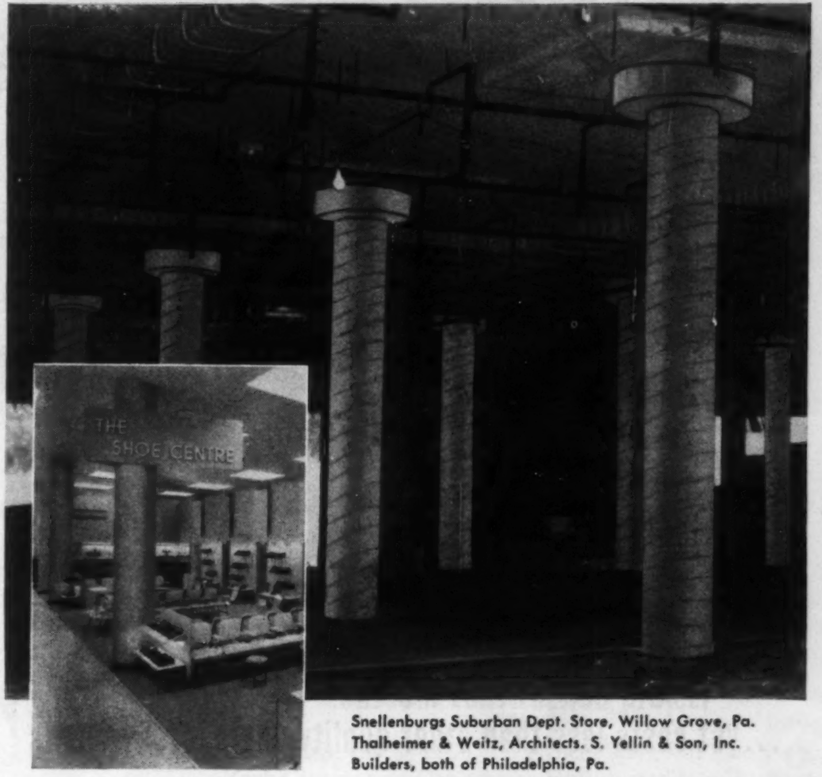
THE SCIENTIFIC BASIS OF ROAD DESIGN—By F. L. D. Wooltorton, 364 pp. Edward Arnold Ltd., London and St. Martin's Press Inc., 103 Park Ave., New York 17, N. Y. $12.00

WELDING FOR ENGINEERS—By Udin, Funk & Wulff, 430 pp. John Wiley & Sons, Inc. 440 Fourth Ave., New York 16, N. Y. $7.50

(*Continued on page 92*)

Sonotube® FIBRE FORMS

for round columns of concrete



Snellenburgs Suburban Dept. Store, Willow Grove, Pa.
Thalheimer & Weitz, Architects. S. Yellin & Son, Inc.
Builders, both of Philadelphia, Pa.

Columns like this speed up the work!

...low cost SONOTUBES make it possible.

For this department store in suburban Philadelphia, SONOTUBES were used to form all of the circular columns in the building. Quick to erect, because they require minimum bracing, SONOTUBE Fibre Forms are also simple to strip when recommended methods are followed. The resulting concrete column is easy to finish because its smooth surface is unmarred.

Lightweight, low cost SONOTUBES are proven to be a fast, economical method of forming round columns of concrete. Widely used and approved by contractors, engineers and architects everywhere.

SONOTUBES are supplied in specified lengths up to 50' or can be sawed to your requirements on the job. Sizes 1" to 36" I.D.

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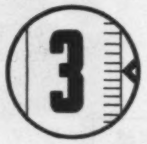

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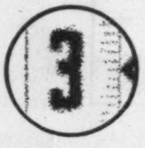

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BOOKS

National Fire Codes—1954: Building Construction and Equipment—640 pp. National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass.

Reports & Pamphlets

Procedures for Analyzing Metal-Finishing Wastes—Ohio River Valley Water Sanitation Commission, 414 Walnut St., Cincinnati 2, Ohio. $1.00

Reinforced Concrete: A Manual of Standard Practice — Eighth Edition. Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago 3, Ill. Limited free distribution.

Highway Needs of West Virginia: A Factual Study. The Automotive Safety Foundation, 200 Ring Bldg., Washington 6, D. C.

Louisiana's Highway Problem—Automotive Safety Foundation, 200 Ring Building, Washington 6, D. C.

Oklahoma's Highway Needs—Prepared by the Oklahoma Department of Highways in cooperation with the Bureau of Public Roads. Obtainable from the State Highway Commission, Oklahoma City, Okla.

Oklahoma's Highway System: A Contion Survey—Obtainable from the State Highway Commission, Oklahoma City, Okla.

Fire Tests of Brick Walls—BMS Report 143, National Bureau of Standards. Superintendent of Documents, Washington 25, D. C. $0.35

Fire Endurance of Open-Web Steel-Joist Floors with Concrete Slabs and Gypsum Ceilings—BMS Report 141, National Bureau of Standards. For sale by Superintendent of Documents, Washington 25, D. C. $0.20

Frost Closure of Roof Vents in Plumbing Systems—National Bureau of Standards, BMS Report 142, For sale by Superintendent of Documents, Washington 25, D. C. $0.25

River Training and Bank Protection: Flood Control Series No. 4—United Nations, New York, N. Y. $0.80

The Sediment Problem: Flood Control Series No. 5—United Nations, New York, N. Y. $0.80

Urban Land Problems and Policies—Housing and Town and Country Planning Bulletin 7, United Nations, New York, N. Y. $1.75

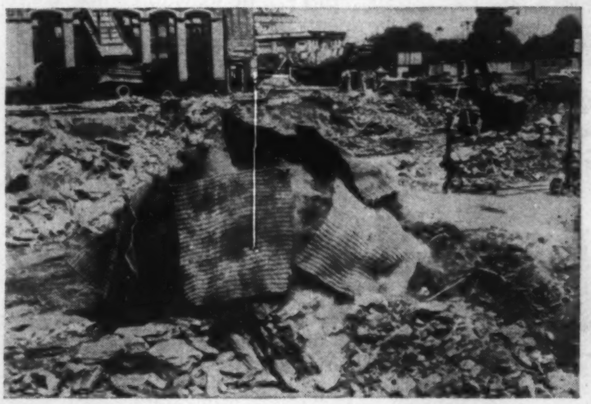
Pollution Sources in Wool Scouring and Finishing Mills and Their Reduction Through Process and Process Chemical Changes—New England Interstate Water Pollution Control Commission, 73 Tremont St., Boston 8, Mass.

BLASTING OPERATIONS move fast, bite deep at the Triborough Bridge and Tunnel Authority's Columbus Circle development (right). According to present plans, the 9-acre Coliseum-Convention Hall and adjoining office building (rendering, above) will be ready for occupation in March '56.

Going deep to change the New York skyline

TAMPING DOWN CHARGES of Du Pont Special Gelatin 40% on Coliseum site.

BLAST BREAKS UP ROCK for quick removal. Heavy steel mats confine explosions in this thickly populated metropolitan area.



Du Pont Special Gelatin 40% gives excellent breakage on Coliseum construction project

Last April, the $35,000,000 project that will give New York City its first Convention Hall started to roll, under the direction of Walsh-Fuller-Slattery, general contractors. All blasting on the site is being handled by the Thomas Crimmins Contracting Co. Their job: carving out foundations for the sprawling Coliseum, 20-story office building and the two 14-story apartment houses included in the plan . . . removing literally acres of bedrock!

Could be tough, but this N.Y.C. contractor is keeping right on schedule with Du Pont Special Gelatin 40%. As on previous contracts, this dependable all-purpose gelatin is saving Crimmins both time and money while providing all the blasting power needed.

For complete information on this, or any other economical Du Pont explosive or blasting agent, contact our representative or write: E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Del.

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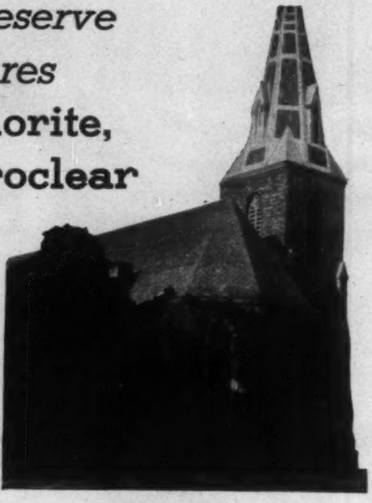
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

How to restore and preserve costly masonry structures with **D-J Mortar, Thorite, Thoroseal and Thoroclear** *even though masonry looks beyond repair!*



Second Episcopal Church of Boston, Brookline, Mass.

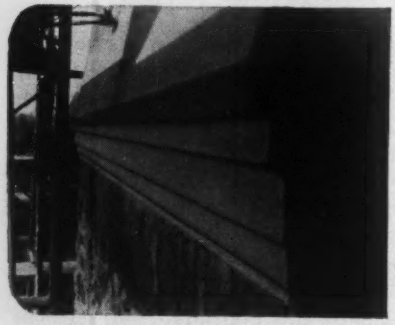
Only the bare skeleton of cornice remains after years of disintegration.

To repair, all loose material was cut out and complete surface was wire brushed in preparation of THORITE treatment.

Above photos show how vines grew over stone structure and hid most of damaged masonry.

Vines were cut away from building and disintegrated joints grouted with D-J Grouting Mortar.

Stone trim was then given two coats of THOROSEAL. Entire surface received a coat of transparent THOROCLEAR.



AFTER Brush and trowel coat of THORITE, nonshrink patching mortar was used to restore this masonry to its original lines. A two-coat application of THOROSEAL was applied to beautify and protect the surface. Nonsagging THORITE can be used to model any masonry structure back to its original lines.

ALL MASONRY NEEDS PROTECTION

Stretcher stone work treated with D-J Grouting Mortar and entire stone surface THOROCLEARED.

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the THORO system
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Standard Dry Wall Products, Inc.
NEW EAGLE, PENNSYLVANIA, U.S.A.

OBITUARIES

Frederick L. Copeland, 72, for 40 years vice-president of Bates & Rogers Construction Corp., Chicago, died Jan. 8 in San Mateo, Calif. He joined the firm in 1905, two years after receiving an engineering degree from Yale University. Construction projects under his supervision include the Kingsburg Ordnance Plant near La-Porte, Ind., and 36 steel bridges on the Alcan Highway.

Lynn O. Knowlton, 70, structural engineer with H. K. Ferguson & Co., Cleveland, died Dec. 3 in Madison, Wis. He had just completed the designs for a new government powder plant near Baraboo, Wis. Before joining Ferguson, he was with Bass, Knowlton & Co., and Bishop, Knowlton & Carson, Indianapolis firms.

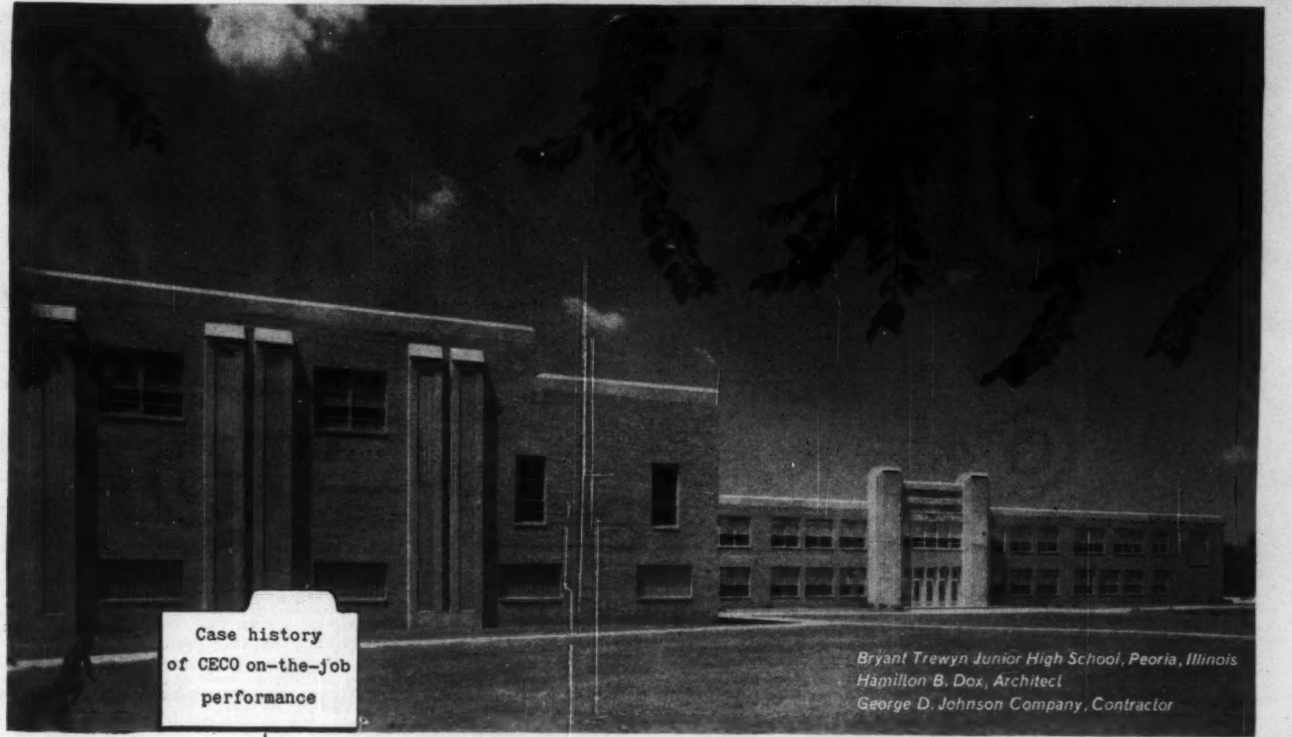
Henry Tabor, 61, a civil engineer at the Bureau of Reclamation for the past 10 years, died in Denver Nov. 30. Earlier in his career he taught civil engineering at the University of Wisconsin, where he was graduated, and worked for the Southern California Edison Co.

Christopher G. Jones, globetrotting railroad construction superintendent, died in Garberville, Calif., early in December. He started his construction career in Nevada boom towns, became a superintendent for Goethals on the Panama Canal and Zone railroad, worked on Balboa fortifications and turned up in Alaska in 1914 for the Alaska railroad project. Following World War I he helped restore Siberian railway operations.

Ned Black, 73, who was zoning administrator of Harrisburg, Pa., as well as borough engineer for Wormleysburg and Lemoyne, Pa., died Jan. 4. He received his degree in engineering and architecture from Columbia University. In 1908 he went to China, where he spent 10 years in missionary work, building and designing church structures.

Dwight C. DeWeese, 66, a civil engineer with Eastman Kodak Co. in Rochester, N. Y., for 12 years, died Dec. 22. He formerly served for 30 years in the engineering department of the Baltimore & Ohio Railroad.

William R. Barry, 65, a senior engineer in the New York City Department of Public Works, died Dec. 6 in Hartsdale, N. Y. He had been with the department for 38 years.



Bryant Trewyn Junior High School, Peoria, Illinois
Hamilton B. Dox, Architect
George D. Johnson Company, Contractor

problem: meet a school building budget

solution: Ceco products...
saved 30% in concrete
saved 30% in deadload
saved 30% in roof costs

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When a school building budget demands costs be cut to the bone, savings must be made from the ground up. And that is what Architect Hamilton B. Dox did with the Bryant Trewyn School. First there was the matter of basic structural methods. The architect and contractor brought Ceco into the planning—and together worked out the most efficient ways to frame the floors and roofs.

Ceco Steel Joists, chosen for classroom areas . . . saved 30% in concrete compared to heavy concrete framing—saved 30% in deadload—saved two months' erection time.

Ceco-Meyer Concrete Joist Construction, selected for the gymnasium area—provided rigidity—fire safety—speed—efficient design to reduce deadload . . . offered equally important savings. Then decking got the critical eye. When precast concrete design was compared with Ceco Steel Roof Deck, a saving of 30% in cost was chalked up for the Ceco method. Standard Ceco Architectural Projected Windows were chosen to eliminate the extra cost of special fabricating. Ceco Service met the construction schedule to the day—another example of saving through planning. CECO STEEL

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲ **MASSACHUSETTS**—BA 2/16—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Becket and Otis—Contr. 51-020 hy. and bridge constr. $1,600,000. Plans deposit $50, Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, engrs. CD 8/11.

BIDS ASKED—BUILDINGS

▲ **Conn, Fairfield**—SCHOOLS—BA 1/31—Town School Bldg. Comn., Town Hall, Southport Elementary School Mill Hill Rd., $450,000. Holland Hill School, Highlawn and Jennifer Roads, $705,000. Lyons & Mather, 211 State St., Bridgeport, archts. Plans deposit $50. Extended date. CD 12/29.

Mass., Wrentham—SCHOOL—BA 2/3—Town, School Bldg. Comn., Wrentham, elementary school. $380,000. The Architects Collaborative, 96 Mt. Auburn St., Cambridge, archts. CD 12/21, under LB.

▲ **Conn., Stamford**—HOUSING—BA 2/15—City Housing Auth., W. H. Connelly, chn., 100 Myano Lane, moderate Rental Housing Proj. MR 55. $2,600,000. Plans deposit $30. William F. R. Ballard, 123 E. 77 St., New York, N. Y., archt. CD 9/1, under LB.

▲ **Conn., Hamden**—SCHOOL—BA 2/25—Town, Bd. Educ., 2040 Dixwell Ave., brick, cinder block Junior High School, Newhall St. $1,600,000. Warren H. Ashley, 967 Farmington Ave., West Hartford, archt. CD 5/24.

† **Mass., Chicopee Falls** — WAREHOUSE — BA On Or About 2/25—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, A. C. and Troop Supply Warehouse, Westover Air Force Base, ENG-19-016-55-35, $500,000-$600,000. Plans deposit $10. CD 3/26/53.

SOON LETS CONTRACT—BUILDINGS

▲ **Conn., New Haven**—HOTEL—Perry, Shaw & Hepburn, Kehoe & Dean, archts., 955 Park Square Bldg., Boston, Mass., soon lets contract hotel, Church and Wall Sts., for Sheraton Corp. of America, 470 Atlantic Ave., Boston, Mass. $3,700,000. CD 1/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Del Virgilio Constr. Co., 534 West St., Pittsfield, Mass. LB **$84,154**, est. $81,000. hy. reconstr. Rte. 20 (Snake Hill Curve) Pittsfield. Bids Nov. 11. CD 1/4.

MASSACHUSETTS — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Maklin Sand & Concrete Products Co., 349 Main St., Greenfield, Mass. CA **$183,191**, est. $210,000. S-90 (5) hy. constr., Winchendon. Bids Dec. 21, awarded Jan. 11. CD 12/7.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn. CA **$3,487,231** est. $3,500,000. Contr. 51-050 hy. and bridge constr., Warren, Brimfield and Sturbridge. CD 1/3, under LB.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Grandview Constr. Corp., 740 S. Fulton Ave., Mt. Vernon, N. Y. LB **$2,386,905** est. $2,300,000. Contr. 51-190 hy. and bridge constr., Chicopee. Knappen, Tippetts, Abbett, McCarthy, 683 Atlantic Ave., Boston, Mass., sect. engrs. Bids Jan. 13. CD 12/27.

† **Joseph Maggiore & Sons**, 118 Golden Ave., Medford, Mass. LB **$141,500** est. $150,000. constr. four 1 story concrete block structures Hanscom Air Force Base, Inv. 19-604-55-15, BEDFORD, MASS. Cambridge Research Laboratories, 224 Albany St., Cambridge, Mass. Bids Jan. 12. CD 12/23.

Susi & Williams Corp., 11 Manning Rd., Dedham, Mass. CA **$97,250**, est. $100,000. water main constr., WEST SPRINGFIELD, MASS. Town, Bd. Water Comrs., Town Hall, West Springfield, Mass. Bids Jan. 10. CD 1/4.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,
L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn., CA, **$3,788,921**, Proj. 322-01, c. conc. 25,745 lin. ft. on Section 22, Greenwich-Killingly Expressway Westbrook-Saybrook. Bids Dec. 6, awarded Jan. 6. CD 12/14, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Wexler Constr. Co.**, 118 Needham St., Newton, Mass. CA **$1,317,140**, est. $1,200,000. High SCHOOL, Nahatan St., WESTWOOD, MASS. Town, High School Bldg. Comn., Colburn School High St., Westwood, Mass CD 12/22, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New York—DUCT LINES—BA 2/1—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, duct lines in Liberty Ave., between 98 and 100 Sts., Queens Boro, Route 119-G, Rockaway Route. CD 8/31/45.

NEW JERSEY—BA 2/3—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Hudson and Essex Counties—Contract N-10A, concrete deck and other work for Newark Bay Bridge on Newark Bay-Hudson County extension of N. J. Turnpike, Bayonne and Newark. Plans deposit $10. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York 5, N. Y., engrs. CD 8/20/53, under Streets and Roads.

N. Y., New York—BA 2/4—President Manhattan Boro, Municipal Bldg., Zone 7, Contr. 45B, completion of ramp connections between Pearl St. at Robert F. Wagner Sr. Pl. and elevated public highway in South St. Plans deposit $30.

NEW JERSEY—BA 2/8—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Hudson Co.—Contract N-27B, fabrication and erection of superstructure steelwork for Section B of North Terminal Ramps on Newark Bay-Hudson County extension of N. J. Turnpike, Jersey City. Plans deposit $15. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York 5, N. Y., engrs. CD 8/20/53, under Streets and Roads.

† **Pennsylvania**—BA 2/10—U. S. Eng., P.O. Box 1715, Baltimore 3, Md., channel excav., bank stabilization, control manholes, Williamsport, Flood Protection Proj., Williamsport, ENG-18-020-55-20. Plans deposit $10. CD 10/16/52.

▲ **N. J., Hoboken**—PIER—BA 2/21—At Office Chief Engineer, The Port of New York Auth., 111 8th Ave., New York 11, N. Y. constr. Pier A, Hoboken-Port Authority Piers, HP 120.006. Plans deposit $50. **(Correction**—Plans deposit). CD 1/14.

† **Maryland**—BA On Or About 2/24—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., Edmonston pressure conduit, Bladensburg, CIVENG-49-080-55-33. CD 6/9/44.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

▲	Federal Government
ENR	Project of $1,000,000 or over.
CD	Engineering News-Record
†	Construction Daily

For additional reports see Construction Daily.

BIDS ASKED—BUILDINGS

Pa., Erie — OFFICE — BA 2/1 — Erie Insurance Exchange, 6 and French Sts., 2 story, bsmnt., 80x160 ft. brick, block, steel insurance office. $700,000. Nelson, Goldberg & Heidt, Daniel Baldwin Bldg., archts.

Pa., Phila.—HOTEL—BA 2/1—At Office The Ballinger Co., archt., 121 N. Broad St., hotel alterations, for Walnut Park Plaza, c/o Ralph R. Lipschutz, 28 S. 18 St. $500,000. CD 6/21.

N. Y., Port Richmond—GARAGE—BA 2/7—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. G, garage for Port Richmond Pollution Control Proj., Richmond Boro. Plans deposit $10. CD 10/18.

Pa., Indiana — SCHOOL — BA 2/16 — Indiana School Auth., High School, Indiana, 1 story L-shaped, brick, block, steel school. $500,000. Plans deposit $25. Hunter, Caldwell & Campbell, 5 Ave. and 36 St., Altoona, archts. CD 7/29.

▲ **Pa., State College**—STUDENT HEALTH CENTER—BA 2/16—General State Auth., 18 and Herr Sts., Harrisburg, completion student health center, Pennsylvania State University, $1,000,000. Plans deposit $15. Trautwein & Howard, 1411 Walnut St., Phila., archts. CD 8/5/53.

SOON LETS CONTRACT—BUILDINGS

▲ **Pa., Neshaminy**—RESTAURANT, etc.—Atlantic Refining Co., 260 S. Broad St., Phila., soon lets contract, restaurant, service station and parking area on Delaware River exten. of Pennsylvania Turnpike. $1,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., LB **$3,128,082**, third lateral sewer constr. proj., will require installation approx. 42 mi. lateral sewer pipe, 16 mi. house connections, in Valley Stream, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old County Court House, Mineola, N. Y. CD 9/20/51.

† **United States Steel Co., American Steel & Wire Div., Cyclone Fence Dpt.**, 796 Frelinghousen Ave., Newark 5, N. J., CA **$180,860**, Schedule 1 (4 sites) in N. J., south of Plainfield, N. J.; Schedule II, (4 sites), in N. J. and N. Y., west of Hudson River;
Anchor Post Products, Inc., 9 E. 38 St., New York, N. Y. CA **$79,892**, Schedule 3, (4 sites) in Long Island and Westchester, N. Y., foregoing is for fencing and firebreaks, etc. Serial No. ENG-30-075-55-202, NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16 St., New York, N. Y. Bids Dec. 29. CD 11/30.

Codi Contr. Co., 231 E. 123 St., New York, N. Y., CA **$77,210**, Contr. 545, laying, relaying sidewalks, setting and resetting curbs, when and where directed, NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Dec. 15. CD 12/7.

Daniel F. MacNamee & Co., Inc., 271 North Ave., New Rochelle, N. Y., LB **$739,264**, approx. 2.2 mi. roads, incl. approx. 340,000 cu. yd. excav. and embankment; 2,200 cu. yd. concrete, 60,000 sq. yd. rip rap, permanent type asph. macad. pavements, culverts and guard railing in Lake de Forest Reservoir area, SPRING VALLEY, N. Y. Spring Valley Water Works & Supply Co., Spring Valley, N. Y. Bids Jan. 7. CD 12/14.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Fehlhaber Corp., 217 E. 44 St., New York, N. Y., LB **$2,493,445**, substructures for East Viaduct of Newark Bay-Hudson County extension of N. J. Turnpike from Communipaw Ave. to Grand St., Contract N-21, Jersey City, Hudson Co. Bids Jan. 11. CD 12/20.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton,
Kolyn Constr. Co., 207 Commonwealth Bldg., Trenton, N. J., LB **$103,799**, Cumberland Causeway bridge over Stow Creek and approaches in Lower Alloys Creek Twp. Salem and Stow Creek Twp., Cumberland Co. Bids Jan. 11. CD 12/27.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Klevens Corp., 3 Federal St., Yonkers, N. Y., CA **$1,263,360**, Contract N 15, substructures for 5 bridges structures from Linden Ave. to C.R.R. of N. J. crossing at Phillip St. in connection with Newark Bay-Hudson County extension of N. J. Turnpike, Jersey City, Hudson Co. Bids Dec. 30, awarded Jan. 12. CD 1/4, under LB.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
American Bridge Co., 25 Broadway, New York, N. Y., CA **$1,169,430**, Contract N-27A, fabrication, erection of superstructure steelwork for portion of North Terminal ramps of Newark Bay-Hudson County Extension of N. J. Turnpike, Jersey City, Hudson Co. Bids Dec. 30, awarded Jan. 12. CD 1/4, under LB.

† **M. & J. B. McHugh**. 892 N. Markoe St., Phila., Pa. LB **$108,052**, Bid 2310, water mains in Alicia St.,

(Continued on page 98)

SWINGING A Big Hendrix Bucket on a 50 foot boom, the Lametti Company's American 300 Series Crawler Crane swiftly and efficiently digs a sewer trench for the proposed $15,000,000 Southdale Center shopping district in a Minneapolis suburb.

Permanently-aligned shafts, gears and assemblies, one-piece electrically welded machinery deck, anti-friction bearings throughout help make American the most rugged, most dependable cranes built.

"AMERICAN gets more done because it takes less effort to operate," says crane operator Earl M. Evans. After a 10-hour shift on the American, Evans says he feels less tired than with any other rig. Anti-Friction bearings in American's brake linkage reduce leg effort over 60%, minimizing operator fatigue and increasing production.

R LAMETTI
TRUCTION CO.
PAUL MINN

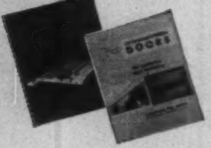
DIGS 600-FOOT TRENCH IN 8½ HOURS

American Dragline Helps Keep Sewer Jobs on Schedule

The Peter Lametti Construction Company of St. Paul, Minnesota is enthusiastic about the power and efficiency of its new American 300 Series Crawler Crane. On sewer jobs, its new American Dragline has dug 600 feet of trench, averaging 8 to 10 feet in depth, in about 8½ working hours. In the rapidly expanding suburban areas of St. Paul and Minneapolis, the Lametti Company has several large sewer and water main jobs going simultaneously. The American Crawler Crane's ability to give maximum performance day in and day out helps further the Lametti Company's enviable reputation for "on schedule" production.

"A POWERHOUSE", says Harry H. Petersen, Lametti Company Vice President, of the firm's new 300 Series American Crawler Crane. "On recent projects," Petersen stated, "our new American machine has showed unusual power on the heaviest of work."

For more than 75 years, American Hoist and Derrick Company has been famous throughout the world for its giant cranes, hoists and derricks. This wealth of engineering experience is evident in American's 300 and 700 Series Cranes. For factual, helpful information on American Crawler or Truck Cranes, see your American Distributor or write American Hoist & Derrick Co., St. Paul 1, Minnesota.



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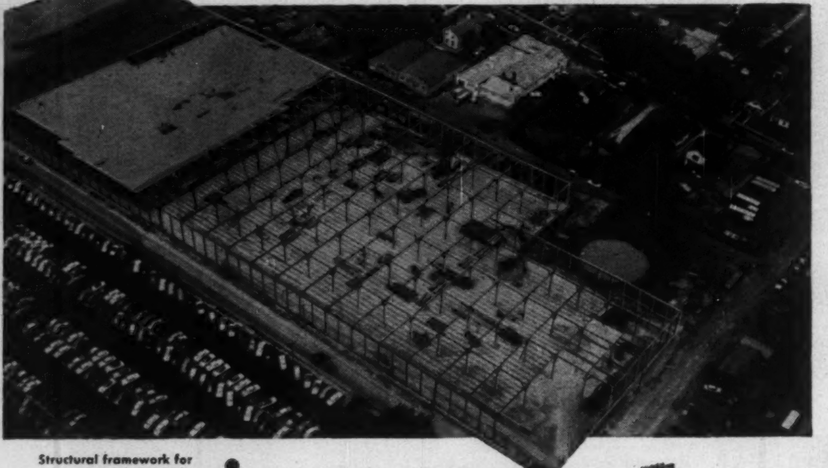
FIRM ____________
ADDRESS ____________
CITY ____________ ZONE ______ STATE ______

Servel expands . . . with an assist by INTERNATIONAL SERVICE



Structural framework for new warehouse of SERVEL, INC.

RYAN CONSTRUCTION CORP., Evansville, Indiana: General Contractor

INTERNATIONAL STEEL CO.: All Structural Steel, Bar Joists, Roof Decking, Doors

SERVEL'S SLOGAN — "the name to watch for great advances in refrigeration and air conditioning" — is well supported by expansion projects such as this newest superwarehouse. Nearly a half-mile around, it provides 260,796 square feet of soundly planned space to speed efficient handling of incoming and outgoing shipments.

Rail and truck facilities are divided by the huge building and installed both indoors and out. These include a double railroad track under roof, also an extensive truck dock served by 23 vertical-lift doors.

Counterbalanced and hand-operated, each 10 feet high by 8 feet wide, all doors for the truck facility were engineered and built by International. International also supplied all structural shapes, bar joists, and roof deck — all delivered to expedite construction of the giant storage structure.

This typifies the advantages offered *you* in complete, and *completely integrated* INTERNATIONAL SERVICE . . . dependable, timesaving, and usually cost-saving too! Mail coupon for confirming data.

INTERNATIONAL SERVICE

2010 EDGAR STREET
EVANSVILLE 7, INDIANA

INTERNATIONAL STEEL COMPANY

(Continued from page 96)

etc., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, c/o owner, water comr. Bids Jan. 4.

W. V. Pangborne Co., Inc., 1927 W. Montgomery Ave., Phila., Pa., LB **$189,366,** est. $180,789. Southeast Treatment Works, outdoor unit type transformer substation; LB **$155,360,** Central Schuylkill Sewage Pumping Station, Bid 2307, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, c/o owner, water comr. CD 3/25/46.

† **Central States Constr. & Equipment Co., Inc.,** 229 W. Main St., Belleville, Ill. LB, **$663,418.** air passenger terminal bldg., Dover Air Force Base, Eng. 36-109-55-29, DOVER, DEL. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Whiteside Foster Damon & Doane, Inc., Penna. Bldg., Wilmington, Del., archt. CD 12/2.

John Julian Constr. Co., 109 S. DuPont Rd., Elsmere, Del., LB **$230,726,** sanitary sewers in North and South Minquadale, WILMINGTON, DEL. New Castle Co., Public Bldg., 11 and King Sts., Wilmington, Del. Bids Jan. 11. CD 1/5.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Dickerson, Inc., Monroe, N. C. LB **$220,369.** 3 span steel beam bridge to carry Pocomoke City By-Pass (U. S. 13) over N.Y. P. & N. R.R., near Pocomoke City, Contr. S 177-5-120, Somerset Co. Bids Nov. 11. CD 12/21.

† **MARYLAND**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

McGuire & Rolfe, First and O Sts. S. E., Wash., D. C. CA **$113,018.** access road to Indian Head Naval Reservation, Proj. Md. D-AD-2 (2), Charles and Prince Georges Counties. Bids Nov. 11. CD 12/8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Eastwood Village Homes,** c/o Klein & Parker Realty Co., 1391 Northern Blvd., Roslyn, N. Y. Owner Builds. **$2,000,000.** 200 HOUSES, Jericho Turnpike, CENTEREACH, N. Y

Montrose Manor Homes c/o Brown-Solomon & Co. 1016 Park St., Peekskill, N.Y. Owner Builds. **$650,000** 50 HOUSES, 20-acre tract, Sunset Blvd., near Kings Ferry Rd., MONTROSE, N.Y.

▲ **New Dorp Estates, Inc.,** Harold E. Wittemann, pres., 580 Fifth Ave., New York 18, N. Y. Owner Builds. **$5,000,000.** 160 HOUSES, SHOPPING CENTER, on tract at Hylan Blvd. and Old Mill Rd., NEW DORP, N. Y.

Regas Building Corp., 750 Grand Concourse, New York 51, N. Y. Owner Builds. **$800,000.** 6 story APARTMENT, 137-41 E. 55 St., NEW YORK, N. Y. CD 12/27.

Paul Tishman General Contractor, Inc., 21 E. 70 St., New York 21, N.Y. CA **$700,000.** OFFICE bldg., 60-66 E. 56 St., NEW YORK, N.Y. Sophie L. Wrona 175 W. 93 St., New York, N.Y. CD 12/13.

▲ **Manhasset Hills Homes,** c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. **$4,000,000.** 134 HOUSES, near Shelter Rock Rd., south of Northern State Parkway, NORTH HILLS, N. Y.

▲ **Veit & Co., Inc.,** 260 DeVoe St., Brooklyn 11, N. Y. CA **$3,000,000.** 5 COLLEGE BLDGS., Southern State Parkway, between Hempstead and N. Village Aves., ROCKVILLE CENTER, N. Y. Molloy Catholic College for Women, c/o Beatty & Berlenbach, archts., 32 Court St., Brooklyn, N. Y. CD 8/24.

▲ **Chanin Corp.,** 122 E. 42 St., New York 17, N. Y. Owner Builds. **$3,000,000.** SHOPPING CENTER, to incl. branch of Gimbels Department Store, Sunrise Hy., VALLEY STREAM, N. Y. CD 5/10.

B. J. Lucarelli & Co., Inc., 22 Orchard St., Jersey City, N.J. CA **$738,700.** general contract 3 staff HOUSING units, ANCORA, N.J. State, Div. Purch. & Property, State House, Trenton, N.J. CD 12/14. under LB.

Martin Infante Co., Inc., 194 Westervelt Pl., Lodi, N. J., LB **$980,650,** SENIOR HIGH SCHOOL and alterations to JUNIOR HIGH SCHOOL, GLEN ROCK, N. J. Bd. Educ., Glen Rock, N. J. Bids Jan. 5.

▲ **Valley View Homes,** Att. Blaise Ravickio, Jacksonville Rd., Mount Holly, N. J. Separate Contracts. **$2,000,000.** RESIDENTIAL DEVELOPMENT, Jacksonville Rd., MOUNT HOLLY, N. J.

▲ **Stratford Estates,** c/o Arthur Williamson & Son, 484 Route 17, Paramus, N. J. Owner Builds, **$1,000,000.** 70 HOUSES on tract at Cripple Bush Rd., off Blanche Ave., OLD TAPPAN, N. J.

Joseph Rotunde, 223 Emery Ave., Trenton, N.J. Separate Contracts. **$900,000.** RESIDENTIAL DEVELOPPMENT, South Olden Ave., TRENTON, N.J. L. R. Smythe, 11 W. Front St., Trenton, N.J., archt.

Louis J. Cahan & Co., 1411 Walnut St., Phila., Pa. Separate Contracts. **$500,000.** SHOPPING CENTER, parking lot, Edgewood Ave., TRENTON, N.J.

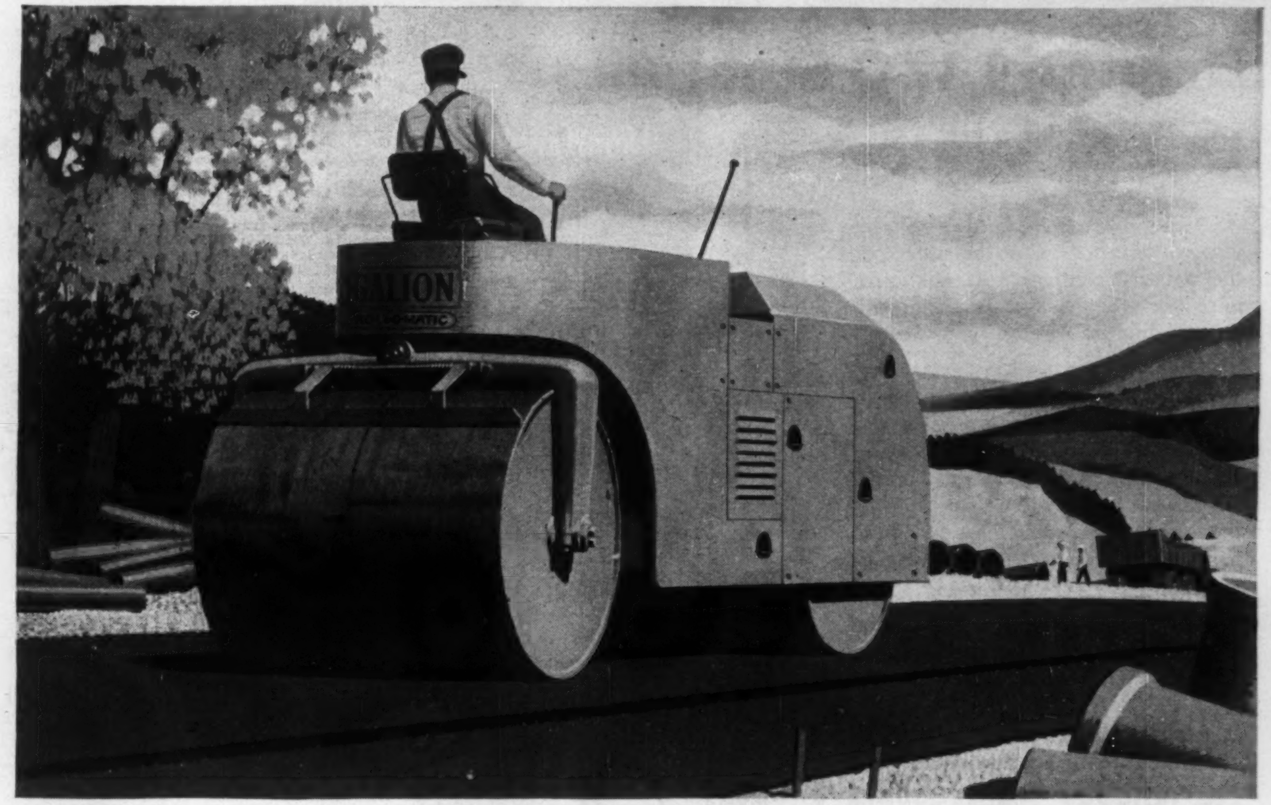
Joseph Specter, Titusville, N.J. Separate Contracts. **$720,000.** RESIDENTIAL DEVELOPMENT, South Olden Ave., TRENTON, N.J. L. R. Smythe, 11. W. Front St., Trenton, N.J., archt.

▲ **Schmidt & Nyce,** 239 Ballymore Ave., Springfield, Pa., CA, **$3,432,000.** 264 unit RESIDENTIAL DEVELOPMENT, Winding Way, YARDVILLE, N.J. Yardville Estates, Inc., 120 Treat Elm Lane, Haddonfield, N.J.

Helwig Bros., Inc., Glenside, Pa., CA **$400,000.** CHURCH, CONVENT and RECTORY and SCHOOL, FAIRLESS HILLS, PA. St. Francis Cabrini R. C. Church, Fairless Hills, Pa. Bids May 21. CD 5/26.

▲ **E. R. Crown Constr. Co.,** 5603 Spruce St., Phila., Pa., Separate Contracts. **$1,925,000.** RESIDEN-

(Continued on page 100)



NEW GALION ROLL-O-MATIC WITH TORQMATIC CONVERTER

rolls 10% more surface per day

Galion — one of the world's largest manufacturers of road rollers—now offers four new gasoline-powered Roll-O-Matic tandem rollers equipped with Allison Torqmatic Converters.

This efficient combination torque converter and fluid coupling makes Roll-O-Matic simpler to operate. It eliminates the master clutch. There are no gears to shift.

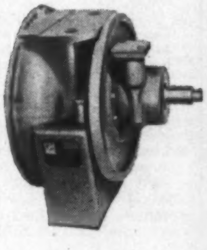
Roll-O-Matic rolls smoother in either direction. With the governor directly on the tailshaft it has quicker pickup —takes guesswork out of reversing. Rolling speed is automatically maintained up hill—on the level—down hill and on curves, by means of the combination of the Torqmatic Converter and tailshaft governor.

The maker reports the operation is so smooth that at least 10% more surface can be rolled per day. And fuel consumption is reduced as much as 25%.

The applications of Allison Torqmatic Converters are broadening rapidly. With units in a new range from 40 to 150 horsepower to fit both gasoline- or Diesel-powered engines, more than likely you, too, can gain the many moneysaving benefits of this drive. The completely *self-contained* converters are compact, easy to install and surprisingly low in price.

Check your equipment manufacturer or dealer or write us for full particulars.

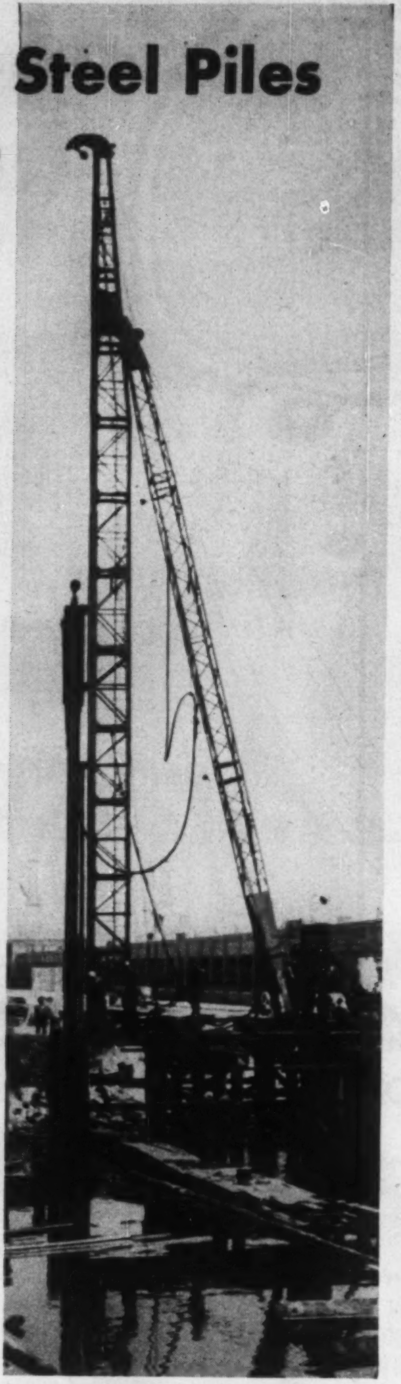
ALLISON DIVISION OF GENERAL MOTORS
Box 894E, Indianapolis 6, Indiana



GM
GENERAL MOTORS

Allison

TORQMATIC DRIVES



Driving 1,170 Steel Piles Under Water

390 Steel piles were driven 85 feet into unstable soil below the surface of the water, in addition to 780 shorter piles, for the lift span piers of the longest, highest vertical-lift bridge on the Pacific Coast.

Proctor & Kuhn, sub-contractors to United Concrete Pipe Corp. selected a McKiernan-Terry 11B3 Double-Acting Pile Hammer for this link in the Terminal Island Access Freeway because of the proven dependability of these hammers on underwater pile driving.

Whatever *your* pile-driving operations may be, you can depend upon McKiernan-Terry Hammers for best results. • Write for Bulletin.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
Also manufacturers of Coal and Ore Unloaders and Bridges, Grab Buckets and Special Machinery
13 PARK ROW, NEW YORK 38, N. Y.

McKIERNAN TERRY

The 11B3 Double-Acting Pile Hammer, used in this project, is one of the McKiernan-Terry 16 sizes of double-acting and single-acting hammers and 2 sizes of double-acting extractors.

MK 359 A

"Gunite" ...... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

(Continued from page 98)

TIAL DEVELOPMENT, Mary Watersford Rd., NARBERTH, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **John J. McDonnell,** McClatchy Bldg., Upper Darby, Pa. CA Approx. **$1,048,319.** Catholic HIGH SCHOOL, NORRISTOWN, PA. R. C. Archdiocese of Phila., 310 N. 19 St., Phila., Pa. Bids Dec. 21. CD 12/14.

▲ **Kiefer-McCabe & Co.,** 1218 Chestnut St., Phila., Pa. CA **$1,275,000.** RESIDENTIAL DEVELOPMENT, Lorraine St., etc., PHILA., PA. Lorraine Park Co., 1218 Chestnut St., Phila., Pa.

Perkins & Clyman, 1635 67 Ave., Phila., Pa. Separate Contracts. **$350,000.** RESIDENTIAL DEVELOPMENT, 61 St., etc., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Walsh Grant Corp.,** c/o Solomon Bronstein, Lancaster Ave., St. Davids, Pa. Separate Contracts. **$1,275,000.** RESIDENTIAL DEVELOPMENT, Aster St. and Preston St., PHILA., PA. Lewis J. Cowan, 1505 Race St., Phila., Pa., archt.

Henry M. Taggart, Inc., 1924 Chestnut St., Phila., Pa. LB **$507,000.** DORMITORY, PHILA., PA. Phila. Textile Institute, School House Lane and Henry Ave., Phila. Bids Jan. 12. CD 12/29.

▲ **Matthew H. McCloskey & Co.,** 1620 W. Thompson St., Phila., Pa., CA **$15,000,000,** general contract, 22 story, 1,000-room HOTEL, Pennsylvania Blvd., west of 17th St., in "Penn Center", PHILA., PA. Sheraton Corp. of America, 1 Court St., Boston, Mass. CD 11/6/53.

L-D Building Co., Box 472, Latrobe, Pa., CA **$519,900,** est. $703,909, 2 story, brick, steel GRADE SCHOOL, REYNOLDSVILLE, PA. Reynoldsville-Winslow Joint School Dist., Reynoldsville, Pa., and State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Jan. 6. CD 1/10, under LB.

Joseph Buckert, Willow Grove, Pa. Separate Contracts. **$830,000.** RESIDENTIAL DEVELOPMENT, Street Rd., WILLOW GROVE, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Marmont Development Corp.,** 730 Woodward Bldg., Wash., D. C. Owner Builds. **$4,000,000.** 200 brick detached •HOMES, East West Hy. between BETHESDA and SILVER SPRING, MD. J. D'Etagnier, 1004 Ripley St., Silver Spring, Md., archt.

▲ **Housing Development Corp.,** 7961 Eastern Ave., Silver Spring, Md. Owner Builds. Total est. **$5,000,000.** 250 HOMES at Fernwood Estates; BETHESDA, MD. J. D'Epagnier, 1004 Ripley St., Silver Spring, Md., archt.

▲ **Merrimack Engineering Corp.,** 4916 Del Ray Ave., Bethesda, Md. Owner Builds. **$1,700,000.** 85 brick frame HOMES on River Rd. at North Winston Dr., BETHESDA, MD.

Jos. Meyerhoff Co., 10 E. Fayette St., Baltimore 2, Md. Owner Builds. **$432,250,** 60 frame, brick HOUSES, Johnnycake, Charmwood and Robindale Rds., near CATONSVILLE, MD.

▲ **Metropolitan Homes, Inc.,** 1907 Henry Rd., Rockville, Md. Owner Builds. **$1,500,000.** 10 story OFFICE, Fenton St. and Roeder Rd., SILVER SPRING, MD. Fon J. Montgomery & John Bailey, 8641 Colesville Rd., Silver Spring, Md., archts.

▲ **Simon-Sherman Constr. Co.,** 11425 Old Bladensburg Rd., Silver Spring, Md. Owner Builds. **$10,000,000.** Regional SHOPPING CENTER, Heitmuller Tract, WHEATON, MD. Ted Englehardt, 937 Pershing Dr., Silver Spring, Md., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Va., Bedford—BA 2/8—Town, R. W. Martin, mgr., Court House, raw supply line and filter plant addn. $300,000. Plans deposit $35. Wiley & Wilson, 620 Court St., Lynchburg, engrs. CD 12/1/53.

▲ **Kentucky and West Virginia**—UTILITIES—BA 2/10-Memorial Hospital Assn. of Kentucky, 1427 Eye St., Wash., D. C.. outside utilities and water lines for hospitals at Harlan, Hazard, Whitesburg, Pikeville and McDowell, Ky.; and Williamson and Mann, W. Va., etc. $1,000,000, Sherlock Smith & Adams, Inc., 303 Washington St., Montgomery, Ala., engr. H. K. Bell, 553 S. Limestone St., Lexington, Ky., engr.

BIDS ASKED—BUILDINGS

Va., Amherst—NURSERY—BA 2/8—State Dpt. Mental Hygiene & Hospitals, 12 and Main St., Richmond, 1 story nursery bldg. for 90-children, near here. $350,000. Pendleton S. Clark, Krise Bldg., Lynchburg, archt.

Ga., Cordele—SCHOOL—BA 2/22—State School Bldg. Auth., 41 Exchange Pl. S. E., Atlanta. Northside Elementary and High School (colored). Plans deposit $50. W. Elliott Dunwoody, Jr., 646 Arch St., Macon, archt. CD 10/1/52.

Ga., Barnesville—LUNCH ASSEMBLY—BA 3/3—Georgia State Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, lunch assembly bldg. for Barnesville Grammar School, Plans deposit $50. Webb & Co., 763 Pine St., Macon, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

McLeod Constr. Co., Springfield, Va., CA **$184,680,** 36 in. water supply main, ARLINGTON, VA. Arlington Co., Court House, Arlington, Va. Bids Dec. 20, awarded Jan. 12. CD 12/27, under LB.

† **Walter Truland Electric Co.,** 1511 22nd St. N., Arlington, VA., LB **$101,100,** Base Bid 1, electrical

distr. sys. and two unit sub-stations, ENG-49-080-55-29-(28), FORT BELVOIR, VA. U. S. Eng., First and Douglas Sts., N.W. Wash. 25, D. C. Bids Jan. 11.

† **Ruscon Constr. Co.,** 149 E. Bay St., Charleston, S. C. LB **$227,086.** hangar, Charleston Air Force Base, North Charleston, No. 38-081-55-22, CHARLESTON, S. C. U. S. Eng., Custom House, Charleston, S. C. Bids Jan. 11. CD 12/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Michnick-Di Maio Co.,** 1520 K St. N.W., Wash. D. C. Owner Builds. **$3,250,000.** 250 brick, semi-detached HOMES in Brookville, ALEXANDRIA, VA. J. Saunders, 121 S. Columbus St., Alexandria, Va., archt. CD 2/9/53.

▲ **John W. Daniel,** P. O. Box 4580, Danville, Va., LB **$2,660,000.** HIGH SCHOOL, Beverstone Park, DANVILLE, VA. City, Municipal Bldg., Danville, Va. Bids Jan. 11. CD 12/28.

Reid, Inc., 2415 Mt. Vernon Blvd., Alexandria, Va., LB **$385,464** est. $330,000. Groveton Elementary SCHOOL, Fed. Proj. BB1, FAIRFAX, VA. Fairfax Co. Bd. Educ., Court House, Fairfax, Va. Bids Jan. 11. CD 12/13.

▲ **Degive, Dunham & O'Neill,** 1478 Mescalin St. N. W., Atlanta, Ga., CA **$2,006,742,** continuing EDUCATION CENTER, University of Georgia Campus, ATHENS, GA. Bd. Regents, University System of Georgia, 20 Ivy St., Atlanta, Ga. Bids Jan. 7. CD 1/12, under LB.

▲ **R. F. Farnsworth & Co., Inc.,** 1515 S. Salcedo St., New Orleans, La. CA **$7,019,000.** CIVIC CENTER and CITY HALL, NEW ORLEANS, LA. City, Bureau Purchasing, 302 City Hall, New Orleans, La. CD 1/14, under LB.

▲ **Leo C. Miller Co., Inc.,** 333 S. Bloom St., Louisville, Ky. LB **$1,167,466.** general contract. Gottschalk Junior High SCHOOL, LOUISVILLE, KY. Bd. Educ., Fifth and Hill Sts., Louisville, Ky. Bids Jan. 12. CD 12/13.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

O., Toledo—BA 3/1—City, John Alspach, Serv. Dir., Safety Bldg., grit and grease removal facilities for Secondary Sewage Treatment Plant. $663,000. Plans deposit $25. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago 11, Ill. engrs. CD 4/16/53.

BIDS ASKED—BUILDINGS

Ind., Harlan — SCHOOL — BA 2/1 — Springfield Twp. School Bldg. Corp., Ralph I. Rogers, pres., Harlan, 8 room grade school. Spencerville Rd., just north of Community Park, $350,000. Plans deposit $25. A. M. Strauss, Inc.. Strauss Bldg., Fort Wayne, archt. CD 3/12.

O., Kettering—SCHOOL—BA 2/8—Bd. Educ., Kettering Village Exempted School Dist., 4201 Ackerman Blvd., Dayton, 1 story Rolling Fields Grade School, Acosta St. and Ghent Ave. Plans deposit $50. Rial T. Parrish, Knott Bldg., Dayton, archt. CD 11/5.

▲ **Wis., Janesville**—COURT HOUSE, etc.—BA 2/9—Rock Co., Court House, constr. court house and office, $1,665,000. Plans deposit $100. Extended date. Carl Lloyd Ames, 3625 A. W. North Ave., Milwaukee, archt. CD 12/6.

O., Columbus—HOSPITAL WING—BA 2/12—Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, 4 story addn. to north wing of University Hospital at Ohio State University. CD 3/12/54.

▲ **O., Napoleon** — PLANT — BA 2/15 — Campbell Soup Co., 100 Market St., Camden, N. J., mfg. plant, near here. $9,000,000. Lockwood Greene Engineers. 10 Rockefeller Plaza, New York 20, N. Y., engrs. CD 4/8.

SOON LETS CONTRACT—BUILDINGS

Ill., Kankakee—SHOPPING CENTER—Louis Beckman & Co., Kankakee, soon lets contract, shopping center, $350,000. Mittelbuscher & Tourtelot, 36 S. State St., Chicago, Zone 3, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **City,** City Hall, Cincinnati, O., rejected bids Dec. 28, power and service bldg. for Mill Creek Sewage Works, CINCINNATI, O. LB **$1,700,916.** CD 1/11, under LB.

† **Central States Constr. & Equipment Co., Inc.,** 22 A West Main St., Belleville, Ill., LB, **$94,055,** est. $114,875, levees Degognia and Fountain Bluff Levee and Drainage Dist., Proj. Item V-B, Jackson Co., CIVENG-23-065-55-30. ILLINOIS. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Jan. 10. CD 12/21.

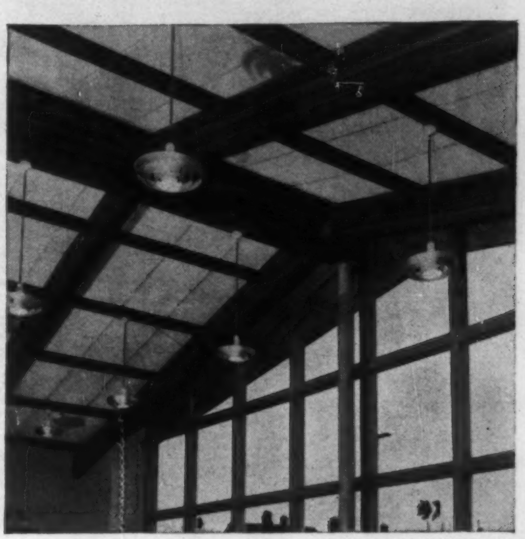
John Dehner, Inc., 1206 Clark St., Fort Wayne, Ind., CA. **$300,000,** clearing site, paving, installing water and sewer mains for new campus, off S.R. 427 north of city, on 188-acre site, FORT WAYNE, IND. Dr. Martin Neeb, pres., Concordia Senior College, Lutheran Church-Missouri Synod, Concordia Pl., Fort Wayne, Ind. Bids Jan. 7. CD 10/29/53, under Commercial Buildings.

† **Joseph A. Bass Co.,** Sexton Bldg., Minneapolis, Minn., LB **$496,200,** 5 squadron headquarters and crash and fire station, Bunker Hill Naval Air Station. PERU, IND. Ninth Naval District. Naval Training Center, Great Lakes, Ill. CD 1/7/53.

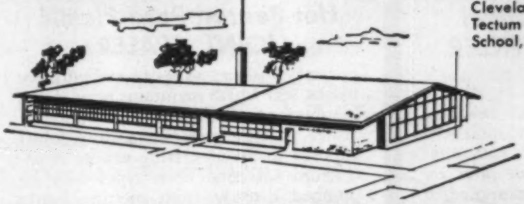
Functional

Decorative

Economical



Architects Fulton, Krinsky and DelaMotte, Cleveland, specified 15,494 square feet of Tectum on Benjamin Franklin Elementary School, Euclid, Ohio, shown here.



Everyone Likes This "Teacher's Pet"—Tectum 9-Value Roof Deck

Tectum® is the favorite because it beautifies, serves, and saves 9 ways on the Benjamin Franklin Elementary School, Euclid, Ohio. Single layer Tectum Deck absorbs noise, prevents its transfer from room to room — assures fire safety by being non-combustible, and cuts fuel costs because of its high insulating value. The textured exposed underside of the deck allowed architects to simplify wall and window design, eliminated need for suspended ceilings — all at substantial savings.

Tectum values reduce construction costs — effect maintenance economies that last for years — because 9 properties are combined in a single layer deck: textural, acoustical, insulative, non-combustible, stable, structural, lightweight, low cost, termite and fungus proof.

S

SEE IT NOW! Ask for 1955 technical data or refer to Section 2e/Te, Sweet's Architectural File.

Rated noncombustible • Light reflectivity 65% • Ultimate live load 200 psf • Noise reduction coefficient .85 to .75 • "U" value .13 to .22 • 4 thicknesses, 11 standard sizes

Tectum® Div.
The Alliance Manufacturing Company
NEWARK, OHIO

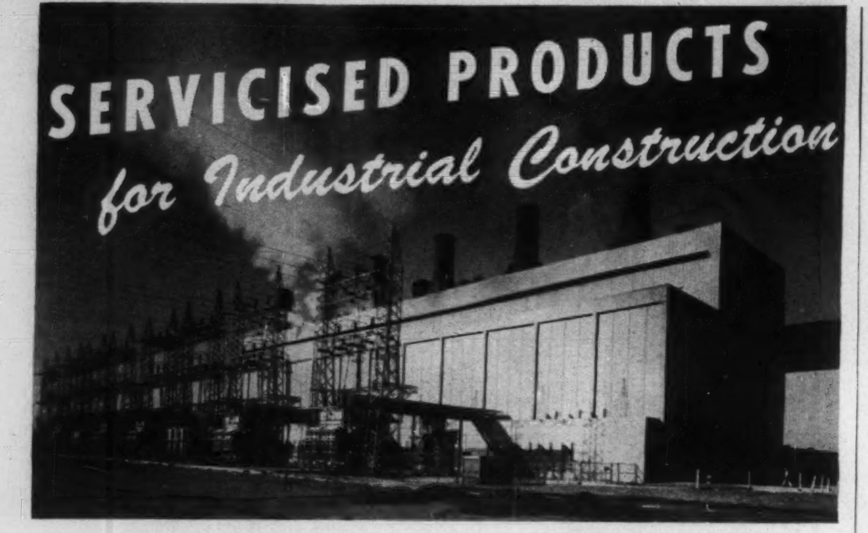
TECTUM DIV.
130 South Sixth Street, Newark, Ohio

_____ Please send Technical Data.

Name __________ Title __________

Address __________

City __________ Zone ____ State ______

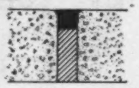


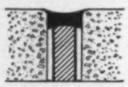
KORK-PAK *Premolded* JOINT FILLER

KORK-PAK — an exclusive Servicised development — *is the lowest cost non-extruding joint filler on the market.* Composed of cork granules bonded together with asphalt between two sheets of asphalt paper, KORK-PAK is resilient — recovers more than 80% of original thickness after compression — and has high resistance to moisture absorption. Readily handled without. breakage.

Hot Poured Para-Plastic JOINT SEALER

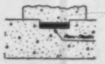
Forms a resilient, adhesive and effective plastic seal which maintains bond down to sub-zero temperatures. Para-Plastic JF Sealer recommended for sealing joints exposed to disintegrating action of petroleum solvents. Both types may be pumped directly from melting kettle into joint. Adheres to concrete, steel, etc.


Joints compressed in warm weather temperatures


Joints opened in sub-zero temperatures

Premolded Para-Plastic JOINT SEALERS

Used in keyed construction joints.


Sealing at footing.

Para-Lateral sealing rear face of wall.

MOLDED Para-Plastic

For sealing keyed contraction or construction joints in vertical or horizontal concrete surfaces. Maintains bond at temperatures down to 0° F and insures a resilient, moisture-tight seal.

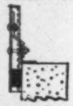
Para-Lateral Strip

Designed for sealing backfilled vertical construction or expansion joints in retaining walls, abutments, foundations, wing wall, etc. against seepage to exposed side. Rigid backing may be nailed directly to forms, or strip may be applied to poured wall.

Corrugated CLOSURE STRIPS

A complete line for sealing corrugated construction against weather elements and heat loss. Available in Asphalt composition, rubber composition or KORK-PAK. KORK-PAK is most resilient non-sagging type and is low in cost. Types available for steel, asbestos cement, aluminum and corrugated glass sheets.

Inner and Outer closure strips sealing cove and outer wall.


Inner closure strip sealing corrugation at foundation.

RUBBER WATERSTOPS

A complete line of Flat Dumbbell, Hollow Bulb and fabricated tee's and ell's available. New Split Dumbbell Type eliminates split bulkheading, saves time and labor. Write for special Waterstop Catalog.

CONCRETE CURING COMPOUND

A clear membrane forming liquid for spray or brush application to insure proper water control in curing concrete. Two types . . . Wax-Resin and Resin Base. Does not discolor finished concrete. Write for special curing compound circular.

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BUILDINGS

LOW BIDS AND CONTRACTS

Westbrook Homes, Inc., 3349 Harrison Ave., Cincinnati, O. Owner Builds. **$950,000.** 46 one story, bsmnt. brick HOMES, off Fleming Rd., CINCINNATI, O. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr. Awarded Jan. 14.

George W. Timmons, 780 W. Lane St.. Columbus. O. LB **$558,449**, general constr., concrete, brick, steel YOUTH CENTER at Ohio State Fairgrounds, 240 ft. long exhibition area and wings, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids Jan. 11. CD 2/15.

Trapp Constr. Co., 556 S. Nelson Rd., Columbus. O. CA Approx. **$350,000.** 3 story, 29x112 ft., white marble S & L OFFICE BLDG., 190 S. High St., COLUMBUS, O. Scioto Savings & Loan Assn., 61 E. Gay St., Columbus, O. A. C. Lenander, 79 E. State St.. Columbus, O., archt.

▲ **Maxon Constr. Co.**, 131 N. Ludlow St., Dayton, O. CA **$1,704,700**, 12 story STORE addn., Indiana limestone block front, facing Main St., north of main store, DAYTON, O. Rike-Kumler Co., 107 N. Main St., Dayton, O.

Charles DePorter, DePorter Home Building Corp., Grange Hall Rd., Dayton, O. Owner Builds. **$450,000.** 29 HOMES in Tall Oaks plot, west side Woodman Dr., south of Xenia Pike, DAYTON. O.

Carlson-Reid, Inc., Box 330, East Chicago, Ind., LB **$580,000.** Lafayette Elementary School, Maywood St. near Sibley, HAMMOND, IND. School, City of Hammond, 5935 Hohman Ave., Hammond, Ind. Bids Jan. 6. CD 12/8.

▲ **Gust K. Newberg Co.**, 2040 N. Ashland St., Chicago, Ill., CA **$5,000,000** 6 story, 250,000 sq. ft., and 1 story, 25,000 sq. ft. FACTORY addns., CHICAGO, ILL. Olson Rug Co., 4020 W. Diversey Blvd., Chicago, Ill. Quinn & Christianson, 104 N. La Salle St., Chicago 2, Ill., archts. Awarded Jan. 10.

Coath & Goss, 5103 W. Lake St., Chicago, Ill. LB **$401,616.** Solomon Grade SCHOOL, CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago 1, Ill. Bids Jan. 7.

Langer & Assocs., Medical Arts Bldg., LaSalle, Ill., CA **$350,000,** 1 story, bsmnt., TELEPHONE BLDG., EAST PEORIA, ILL. Illinois Bell Telephone Co., 206 W. Washington St., Chicago 6, Ill. Holabird, Root & Burgee, 180 N. Wabash St., Chicago 1, Ill., archts. Awarded Jan. 7.

Clearing Industrial District, Inc., 38 S. Dearborn St., Chicago 3, Ill., CA **$600,000,** 60,000 sq. ft., FACTORY and PRINTING PLANT, MELROSE PARK, ILL. Robert O. Law, 2100 N. Natchez St., Chicago, Ill. John C. Cromelin, 6455 S. Central St., Chicago 38, Ill., archt.

▲ **Rose-Hill Realty Co.**, 13324 West Seven Mile Rd., Detroit, Mich. Owner Builds. **$1,200,000.** 100 brick HOUSES, Hanford St. and Southfield Outer Drive Section, ALLEN PARK, MICH.

State Hy. Dpt., Stevens T. Mason Bldg., Lansing, Mich. Owner Builds. **$147,600.** 1 story, steel, masonry maintenance GARAGE for State Hy. Dpt., Brush St., DETROIT, MICH.

North-Moller Co.. 401 N. Jackson St., Jackson, Mich. CA Est. **$150,000.** FACTORY addns., alterations, JACKSON, MICH. Field-Ingram Co., Jackson, Mich. CD 1/5.

▲ **Harry Slatkin Builders, Inc.**, 11534 Dexter St., Detroit, Mich. Owner Builds. **$7,000,000.** 600 ranch HOMES, Country Homes Subdivision, Elmira and Livonia Sts., LIVONIA, MICH.

▲ **Edward Rose & Sons**, 14900 Linwood St., Detroit, Mich. Owner Builds. **$3,500,000.** Thunderbird Development, 250 brick HOMES, LIVONIA, MICH.

Lytle Constr. Co., 7742 Greenfield Rd., Dearborn, Mich. CA Est. **$450,000.** 40 frame HOUSES, Hawthorne Valley Section, NANKIN, MICH. Modern Homes Corp., 31561 Bridge St., Garden City, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **COLORADO**—BA 2/3—Bureau P. Rds., Dpt. Commerce, Bldg. 40, Denver Federal Center, Denver,

Boulder Co.—constr. 4.547 mi. Forest Highway Proj. 26-H3, South St. Vrain, near Boulder. Over $73,000. K. S. Chanberlain, Bldg. 40, Denver Federal Center, Denver, div. engr.

† **Tex., Abilene**—SERVICE CLUB—BA 2/9—U. S. Eng., 100 West Vickery St., Fort Worth, airmen's service club, Abilene Air Force Base, ENG-41-443-55-41. Carter & Burgess, 815½ Throckmorton St., Fort Worth, engrs.

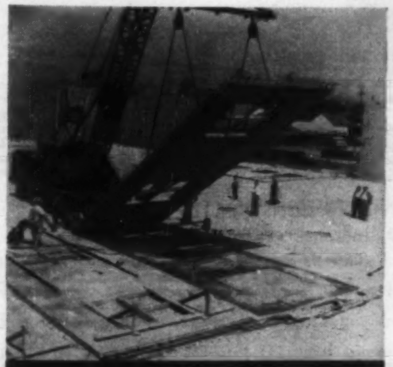
† **Tex., Abilene**—POLICE HEADQUARTERS—BA 2/10—U. S. Eng., 100 West Vickery St., Fort Worth, air police headquarters, Abilene Air Force Base, Inv. No. ENG-41-443-55-69. Puckett & French, Big Springs, Tex., and Butler & Brasher, Lubbock, engrs.-archts.

Kan., Hoisington—BA 2/23—City, at office Mrs. Darlene Schaeffer, city clk., sewage treatment plant addns. Plans deposit $10. Wilson & Co., 705 E. Crawford St., Salina, engrs.-archts.

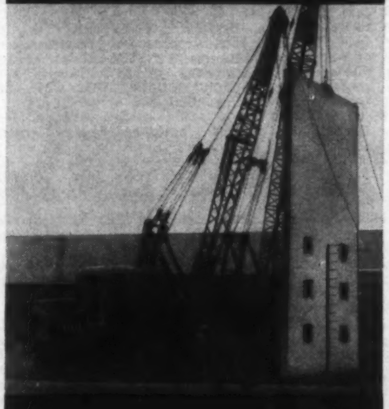
BIDS ASKED—BUILDINGS

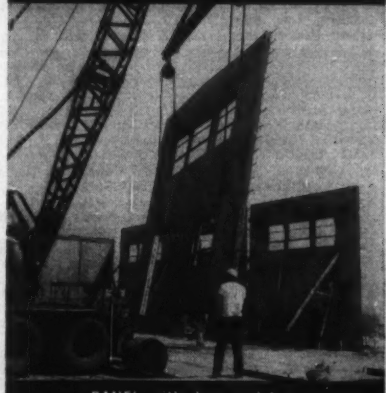
Colo., Boulder—MEN'S DORMITORY—BA 2/18—University of Colorado, Campus, new men's dormitory. $900,000. Gordon D. White and Charles H. Overholt, 615 Columbine St., Denver, engrs. CD 8/12.

(Continued on page 104)


PRECAST PANEL 32' high, 18½' wide with two large window areas.

TRUSS has 60' span at top


114,000 LB. SLAB being positioned


PANEL with door and two window areas.

SUPERIOR

Complete Accessories Plus Experience on Tilt-Up Jobs!

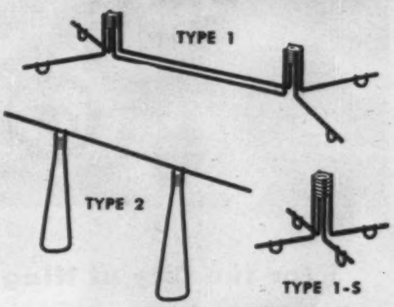
On every Tilt-Up job the proper type of Pick-Up Inserts and Brace Anchors as well as their location in the slab or precast structural member are of prime importance in order to withstand the stresses occurring when *tilting, lifting,* and *positioning.* As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures resulting from the experience of thousands of job applications.

SUPERIOR accessories are designed for fast and efficient handling of all types of precast panels and structural members. The Pick-Up Insert provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. Brace Anchors secure the temporary bolts by which the Braces are attached. The exclusive pivoting action of the adjustable Braces permits quick positioning and alignment of panels. Braces are assembled with 2 x 4's or pipe of lengths to fit job conditions.

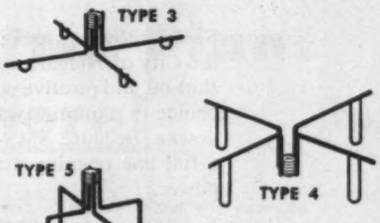
The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete layout service provide a combination which offers safe and efficient handling of precast panels and structural members.

For complete details request a copy of BULLETIN TU-2.

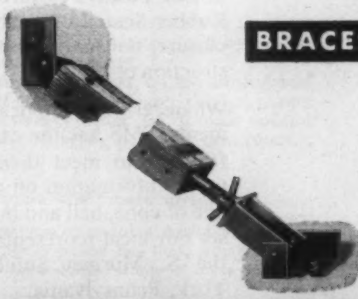
PICK-UP INSERTS



ANCHORS for BRACES



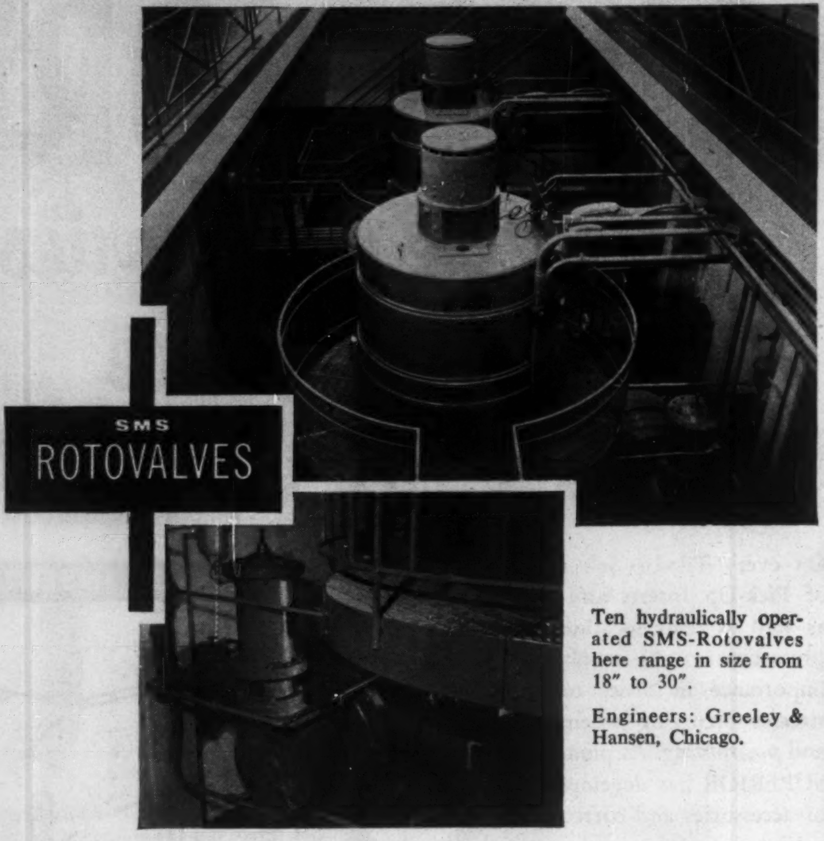
BRACES



SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.



Ten hydraulically operated SMS-Rotovalves here range in size from 18" to 30".

Engineers: Greeley & Hansen, Chicago.

For the City of Niagara Falls, N. Y. . . .

SMS-ROTOVALVES SAFEGUARD HIGH AND LOW SERVICE PUMPS

SMS-Rotovalves were specified to safeguard service pumps in the City of Niagara Falls' new pumping station. Greater initial shut-off and positive control of closing time made them a logical choice to minimize water hammer in pump start-ups and shutdowns. Because SMS-Rotovalves have less pressure loss with a full line opening than other valve types, they save pumping power.

In addition to the SMS-Rotovalves, SMS Babbit-Seated Butterfly Valves meet the rugged, high service header requirements of fast, positive closure. At the adjacent filtration plant, 76 R-S Rubber-Seated Butterfly Valves were specified to give drop-tite closure, unusual economy of layout space and cut initial construction costs.

Whatever your application requirements, SMS has the experience and facilities to meet them. For additional information on our complete line of cone, ball and butterfly valve, see our local representative or write the S. Morgan Smith Company, York, Pennsylvania.

Hydraulic Turbines
Pumps
Gates & Hoists
Trash Rakes
Accessories

HYDRODYNAMICS

Rotovalves
Ball Valves
Butterfly Valves
Free-Discharge Valves
Controllable-Pitch Ship Propellers

SMS
S. MORGAN SMITH CO.

Affiliate Company: S. Morgan Smith, Canada, Limited, Toronto

(Continued from page 102)

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Dallas**—WAREHOUSE, etc.—Associated Wholesale Grocery of Dallas, Inc., Ambassador Row and Profit Dr., soon lets contract 340x418 ft. warehouse; 60x116 ft. office, 69x101 ft. frozen food unit, face brick, steel, concrete frame constr. $1,500,000. Walter W. Cocke & Assocs., 9003 Denton Dr., archts. Mullen & Powell, 701 Reserve Loan Life Bldg., engrs. CD 10/9/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Northern Natural Gas Co., 2223 Dodge St., Omaha, Neb., Owner Builds, **$300,000**, branch gas pipe lines to Hudson, Independence, Rockford, Story City, Grundy Center, Manchester, Dyersville and Kellogg, also 8 stations, IOWA. F. B. Rabb, c/o owner, asst. ch. engr. CD 8/9.

Melco, Inc., 1221 Baltimore St., Kansas City, Mo. LB **$310,000**, imprv. to low service pump station and high service pump station at Florence Pumping Plant, OMAHA, NEB. Metropolitan Utilities Dist., 18 and Harney St., Omaha, Neb. Bids Jan. 13. CD 12/30.

Colorado Valley Electric Co-operative, La Grange, Tex., Force Account, **$115,000**. 125 mi. rural pole telephone lines, Fayette Co., TEXAS.

City, Citv Hall, Abilene, Tex., Own Forces. **$85,000**, park constr., ABILENE, TEX. CD 8/2.

City, City Hall, Abilene, Tex. Own Forces. **$100,000**, street repairing, rehabilitation, drainage, ABILENE, TEX. CD 8/2.

† **Milo J. Choate & Co.**, 1412 W. 5 St., Tyler, Tex., LB **$457,160**, est. $468,037, armament electronics repair shop at Abilene Air Force Base, ENG-41-443-55-53, ABILENE, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Jan. 11. CD 12/10.

▲† **Robert E. McKee, General Contractor, Inc.**, Box 562, El Paso, Tex., CA **$1,108,200**, five A. M. dormitories, Abilene Air Force Base, Inv. No. ENG-41-443-55-58, ABILENE, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Jan 13. Puckett & French, Big Spring, Tex., and Butler & Brasher, Lubbock, Tex., engrs. CD 12/10.

City, Cleveland, Tex. Own Forces. **$75,000**, street repairing and ore surf., CLEVELAND, TEX.

City, Cleveland, Tex., Own Forces. **$62,500**, street open drainage, CLEVELAND, TEX.

Johnson Pump Co., 3272 E. Foothill St., Pasadena, Calif., LB **$111,498**, est. $100,000. pumping unit for sewage treatment plant, EL PASO, TEX. City, c/o P. Service Bd., City Hall, El Paso, Tex. Bids Jan. 12. CD 1/6.

Glade Constr. Co., Box 2055, Fort Worth, Tex., LB **$154,994**, laying misc. water mains in southerly sect. of Wedgewood Addn. area; LB **$192,627**, est. $220,000 c.i. water feeder mains, 30 and 24 in. and 12 in connecting mains, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Jan. 6. CD 12/21.

Miles Strickland, 2802 Louisiana St., Houston, Tex., Owner Builds, **$74,500**. concrete type paved streets, concrete curbs, gutters, near HOUSTON, TEX.

Jack R. Little, 1202 Ogilvie St., Houston, Tex., CA, **$109,000** sanitary and storm sewer lines, HOUSTON, TEX. G. M. De George & Assocs., Melrose Bldg., Houston, Tex. CD 12/22.

Miles Strickland, 2802 Louisiana St., Houston, Tex. Owner Builds. **$130,000**, sanitary-storm sewers, near HOUSTON, TEX. CD 12/29.

Jack R. Little, 1202 Ogilvie St., Houston, Tex., CA, **$76,115**, asph.-paved streets, concrete curbs, gutters, 109-acre tract, HOUSTON, TEX. G. M. De George & Assocs., Melrose Bldg., Houston, Tex. CD 12/22.

Jack R. Little, 1202 Ogilvie St., Houston, Tex., CA, **$46,245**, earthwork, grading, open drainage, leveling filling, 109 acre tract, HOUSTON, TEX. G. M. De George & Assocs., Melrose Bldg., Houston, Tex.

Miles Strickland, 2802 Louisiana St., Houston, Tex. Owner Builds, **$45,000**. c.i. water lines, facilities, near HOUSTON, TEX.

Dawson Co. Lamesa, Tex, Own Forces, **$105,000** Precincts 3 and 4 road imprvs. and asph. topping, LAMESA, TEX. Lubbock Eng. Co., 1638 Main St., Lubbock, Tex., engr. CD 6/9.

Southern Pacific Lines (Texas & New Orleans Ry. Co.) L. A. Loggins, ch. engr. Southern Pacific Bldg., Houston 1, Tex. Own Forces. **$200,000**. embankment earthwork, reconstr., near LANGTRY, TEX. CD 7/13.

City, Laredo, Tex., Force. Account, **$47,000** some c.i. water mains, LAREDO, TEX. CD 8/12.

City, Lindale, Tex., Own Forces, **$150,000** some road rerouting, grading, drainage, surf. LINDALE, TEX. CD 11/13.

City, Livingston, Tex., Own Forces, **$47,100**. W. W. sys. rehabilitation work, LIVINGSTON, TEX. CD 9/17.

City, City Hall, Lufkin, Tex. Own Forces. **$45,000**, water distr. lines, LUFKIN, TEX. CD 10/21.

Calhoun Co., Port Lavaca, Tex. Own Forces. **$45,000**, digging lateral ditches to east of Coleman Creek and some levee work, PORT LAVACA, TEX. CD 9/23.

Drainage Dist. No. 10, Port Lavaca, Tex. Own Forces. **$50,000**, open drainage work in Green Lake area; **$45,000** open drainage work, inside city limits, PORT LAVACA, TEX. CD 8/27.

L. R. Pletz & Las Palmas, Inc., South Texas Bldg., San Antonio, Tex. no bids opened for 1,000-1,200 auto hard paved parking center. SAN ANTONIO, TEX. **$85,000**. CD 10/29/55.

Rodgers & Stewart, Inc., 1407 W. Laurel St., San Antonio, Tex., LB **$47,000**, general earthwork, grading, open drainage in area around shopping center, SAN ANTONIO, TEX. L. R. Pletz & Las

Palmas, Inc., South Texas Bldg., San Antonio, Tex. CD 10/29.

Rodgers & Stewart, Inc., 1407 W. Laurel St., San Antonio, Tex, CA **$75,115,** filling, levelling and hard type paving in shopping area, SAN ANTONIO, TEX. L. R. Pletz & Las Palmas, Inc., South Texas Bldg., San Antonio, Tex. CD 10/29.

John A. Petty, Rte. 3, Longview, Tex. LB **$74,680,** water reservoir unit; LB **$48,160,** water pumping station unit; LB **$47,116,** general imprvs. to water plant, TERRELL, TEX. City, Terrell, Tex. Bids Jan. 6. CD 12/13.

Colorado—State Hy. Dpt., 518 State Office Bldg. Denver,

Herren-Strong Constr. Co., Platteville, Colo., CA, **$226,568,** est. $248,831, plant mix asph. surf. 2.962 mi. State hy. 6, Colo. Proj. F-021-1 (7), Cimarron, Montrose Co;

L. J. Hesser, Greeley, Colo. CA, **$172,270,** est. $187,121, grading, stab., road mix asph. processing 5.071 mi. Colo. Proj. S-0034 (3), Windsor, Weld Co. Bids Jan. 13. CD 1/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **C. T. Wilson Contg. Co.,** 10401 Trongate Place, Glasgow Village 15, Mo. CA Est. **$1,293,650** one hundred sixty-three 27x36 ft. addnl. frame RESIDENCES, in Glasgow Village Unit II, GLASGOW VILLAGE (ST. LOUIS 15 P.O.), MO. Glasgow Village Development Corp., 10401 Trongate Place, Glasgow Village 15, Mo.

† **Sharp Bros. Contg. Co.,** 1014 E. 19 St., Kansas City, Mo. LB **$268,875.** cylcic temperature testing facilities, Lake City Arsenal, Inv. 23-028-55-44, INDEPENDENCE, MO. U. S. Eng., 601 Davidson Bldg., Kansas City, 8, Mo. Bids Jan 4. CD 12/29, under LB.

Texas Clay Products Co., Athens, Tex. Own Forces. **$175,000,** PLANT expansion, incl. new tunnel kilns, ATHENS, TEX.

Inwood Constr. Co., 4224 Live Oak St., Dallas, Tex. CA **$243,335,** SUPPLY BLDG., DALLAS, TEX. Apex Supply Co., 1117 S. Akard St., Dallas, Tex. CD 1/4.

Gower & Folson Constr. Co., Inc., 932½ W. Jefferson St., Dallas, Tex., CA **$109,117,** WAREHOUSE, DALLAS TEX. R. C. Brown Co., 5534 Dyer St., Dallas, Tex. CD 1/4.

▲ **W. S. Bellows Constr. Co.,** 716 N. Everton St., Houston, Tex., CA **$2,750,000.** 140,000 sq. ft. masonry SHOPPING CENTER to be known as "Spring Village Shopping Center", Long Point and Wirtz Rds., HOUSTON-SPRING BRANCH, TEX. Spring Village Co., c/o T. A. Robinson, Jr., pres., 1st Mortgage Co. of Houston, 510 Taft St., Houston, Tex. Thompson McCleary, 2017 W. Gray St., Houston, Tex., archt. R. L. Reid, 2506 Richton St., and James H. Howard & Assocs., 4101 San Jacinto St., Houston, Tex., engrs.

Jacinto Oaks, Inc., under J. B. Belin Jr. & J. Mallette, 805 N. Post Oak St., Houston, Tex., CA, **$371,546** (a) 39 DWELLINGS, CA **$345,150** (d) 28 DWELLINGS, HOUSTON, TEX. Jacinto Oaks, Inc., c/o J. B. Belin, 805 N. Post Oak St., Houston, Tex. CD 12/28.

Miles Strickland, 2802 Louisiana St., Houston, Tex. Purchase and Hire, **$390,000** 45 DWELLINGS, near HOUSTON, TEX. CD 12/22.

H. D. & Rob. D. Fletcher, et al, 3520 27 St., Lubbock, Tex., Purchase and Hire, **$225,000** GRAIN STORAGE ELEVATOR UNIT, LUBBOCK, TEX. CD 7/30.

▲ **Texas Aluminum Co.,** Rockwall, Tex. Own Forces. **$375,000.** Extrusion PLANT Addn., No. 2;

Julian P. Barry, Contractor, Life of America Bldg. Dallas, Tex., CA **$870,500,** 65,000 sq. ft. addns. to PLANT Units No. 4, 5 and 6, ROCKWALL, TEX. CD 8/31/53.

D. G. Janssen, Insurance Bldg., San Antonio, Tex. CA **$468,114,** Sect. 1, 100,000 sq. ft. Las Palmas Regional SHOPPING CENTER, SAN ANTONIO, TEX. L. R. Pletz & Palmas, Inc., South Texas Bldg., San Antonio, Tex. CD 10/29.

L. R. Pletz & Las Palmas, Inc., South Texas Bldg., San Antonio, Tex., no bids opened for Sect. 2, 110,000 sq. ft. Regional Las Palmas SHOPPING CENTER, SAN ANTONIO, TEX. Est. **$775,000.** CD 10/29.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Calif., Muroc**—FIRE STATIONS—BA 2/8—U. S. Eng., 751 S. Figueroa St., Los Angeles, Fire Stations No. 5 and 7 and Rawisonde Facilities, Edwards Air Force Base, ENG-04-353-55-78. $350,000. CD 8/30.

† **Wyoming**—SUB-STATION ADDNS.—BA 2/24—Bureau Reclamation, Dpt. Interior, Cody, Lovell Sub-station addns., Transmission Div., Missouri River Basin Proj., Lovell, Spec. DC-4335. W. A. Dexheimer, comr.; adv. ENR 1/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IDAHO—State Hy. Dpt., Boise,

Duffy Reid Constr. Co., Twin Falls, Idaho, LB, **$979,907,** roadway, plant mix surf., wid'n. 34 ft. and 52.8 ft., concrete bridge 13.721 mi. State Hy. 15, Valley Co. Bids Jan. 11.

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix,

Royden Constr. Co., Box 3707, Phoenix, Ariz., CA, **$222,697,** aggregate base, bit. plant mix, relocation of

NEW Powerhouse on wheels!
Both the 5 and 10KW models are available with 2-wheel trailer, 4-wheel dolly, or skid-mounting.

Trailer-mounted 5 or 10KW

ONAN Electric Plant goes anywhere!

Here's real mobility in high-capacity electric plants! Now you can use *one unit* (in place of several smaller portable plants) for floodlighting and operating motor-driven tools or electrical equipment. You can cut down the number of units on the job, reduce servicing time and maintenance costs!

You can tow a trailer-mounted Onan "CW" Electric Plant as fast as a car will travel . . . anywhere a tractor can go! Fully-protected by heavy-gauge steel housing; stays on the job in any weather.

Onan "CW" Electric Plants are unusually compact, quiet-running and economical to operate; weigh only half as much as water-cooled plants of the same capacity. Powered by Onan two-cylinder, suction-air-cooled gasoline engines built with massive, long-wearing parts for continuous, heavy-duty service.

Wide range of accessories make your "CW" more versatile.

You can equip your "CW" Electric Plants for any type of portable service with a wide range of accessories including skid, battery rack, 9-gallon fuel tank, weather-proof housing, two-wheel trailer, or 4-wheel, rubber-tired dolly. *Put one of these portable, high-capacity units on your job now!*

Onan builds electric plants for every need . . . 400 to 100,000 watts

Call your Onan distributor or write for folder A-362.

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

2859 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINNESOTA

THE SURVEYOR'S NOTEBOOK

Reporting on Unusual Surveying Problems and Their Solutions
Notekeeper: W. & L. E. Gurley, Established 1845

How to Make a Plumb Board for Easier Layouts

"A couple of years ago, windy days, green rodmen and terrain hazards were slowing up construction layout," recalls George Guesmer of Minneapolis. "Reference points were hidden from the transitman by brush, dirt, concrete and construction materials. With the plumb bob swinging in the wind, accurate work became impossible.

"I solved all the problems by making a plumb board. To make one yourself, obtain a builders' three-way plumb and level (used in making an ordinary mason's level) and a piece of plywood ½-inch thick, 48 inches long and the width of the plumb and level (generally three inches). Drill three one-inch holes in the plywood to permit observation of the level bubbles from the rear of the plumb board. Paint the plywood with a couple of coats of flat white.

"After the paint has dried, use black waterproof drawing ink and a ruling pen to draw a line lengthwise down the middle of both sides of the plywood. Graduate the ends of the board in inches—or tenths, if you prefer. The alternating black rectangles make it easy to see the vertical line at a distance. To preserve the inked lines and to keep the board clean, spray the entire board with a clear plastic or brush on a clear spar varnish.

Guesmer plumbing back of obstruction (left); offsetting.

"I found my homemade 48-inch plumb board easy to handle and adequate for most work. It's especially handy for offsetting a reference line or measuring a short distance. I have run many an accurate, trouble-free mile of line using my plumb board, Gurley transits and Gurley levels."

"The Surveyor's Notebook" collection is packed with valuable tips like these. More than 40,000 engineers and surveyors are finding them helpful. Write for your free copy... At the same time, why not send us your own story?

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wash channel, two 3-span bridges on concrete piles 2/3 mi. U. S. 60-70 through Miami, Gila Co.;

Isbell Constr. Co., P.O. Box 958, Phoenix, Ariz., CA, **$315,955,** grading, draining, new alignment 4 mi. State Route 77, Gila Co. Bids Jan. 4;

Arizona Sand & Rock Co., Box 959, Phoenix, Ariz., CA, **$118,000.** select material, aggregate base, bit. road mix 6¼ mi. State Route 90, Cochise Co.;

W. J. Henson Co., Box 471, Prescott, Ariz., CA, **$64,504,** two truck passing lanes State Route 89, Yarnell Hill sector, White Spar Hy., Yavapai Co. Awarded Jan. 11. CD 6/12/52. Grand total $721,156.

▲† **M. M. Sundt Constr. Co.,** 440 S. Park Ave., Tucson, Ariz., CA, **$1,045,538,** hangar access apron, parking apron, blast pad and taxiway shoulders, Davis-Monthan Air Force Base, ENG-04-353-55-65, TUCSON, ARIZ. U. S. Eng., 851 S. Figueroa St., Los Angeles, Calif. Bids Jan. 12. CD 12/21.

† **Lembke, Clough & King,** Box 1391, Las Vegas, Nev. LB **$242,696,** bathhouse and swimming pool, ENG-04-353-55-63, Lake Mead Base, LAKE MEAD, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles 17, Calif. Bids Jan. 11. CD 12/21.

† **General Electric Co.,** Public Service Bldg., Portland, Ore., LB **$788,695,** main generator circuit breakers and bus structures, The Dalles Dam, Wasco Co., CIVENG-35-026-55-83, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Jan. 11. CD 1/3.

† **OREGON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.,

Morrison Knudsen Co., Inc., Hoge Bldg., Seattle, Wash. CA **$409,462,** grade 6.76 mi. Drift Creek Rd., Lincoln Co. Bids Jan. 11.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Transocean Eng. Corp., 7807 Russell City Rd., Hayward, Calif., LB, **$547,527,** grading, surf. 4.4 mi. Ygnacio Valley Road, near Concord, Contra Costa Co.;

Guy F. Atkinson Co., 10 W. Orange St., South San Francisco, Calif., LB, **$1,565,103,** grading, paving, 6 bridges, 1 pedestrian undercrossing 2.4 mi. between Miramar Ave. and Park Pl., Santa Barbara Co.;

Claude C. Wood, P.O. Box 599, Lodi, Calif., LB, **$359,825,** grading, surf., welded plate girder bridge, culvert 6.2 mi. between Igo and Cirvan, Shasta Co. Bids Jan. 5. CD 12/15.

▲ **Charles J. Rounds,** 4529 Alger St., Los Angeles, Calif., LB, **$1,143,101,** constr. rein.-con. box storm drain, Proj. 5, Alhambra-Monterey Park Storm Drain, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Jan. 7. CD 11/7/52.

Vido Artukovich & Sons, 11155 Rush St., El Monte, Calif., LB, **$78,155,** sanitary sewers in Arcadia Ave., Arcadia, C.I. 1651, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Jan. 7. CD 12/2.

BUILDINGS

LOW BIDS AND CONTRACTS

State Dpt. P. Wks., Boise, Idaho, cancelled bids to have been opened Jan. 28, for State TB HOSPITAL addn., GOODING, IDAHO. **$600,000.** Will re-advertise. CD 1/3.

Howard Brewton, 716 N. E. 3 Ave., Portland, Ore., CA **$600,000.** concrete FACTORY addn., PORTLAND, ORE. W. J. Voit Rubber Corp., 2344 N. Columbia Blvd., Portland, Ore. James & Honey, Portland Trust Bldg., Portland, Ore., engrs. Awarded Jan. 10.

▲ **James I. Barnes Constr. Co.,** 205 S. Alvarado St., Los Angeles, Calif., CA, **$1,023,000,** Group 2, CAMPUS CENTER and LIBRARY, BAKERSFIELD, CALIF. Kern County Union High School and Junior College Dist., 312 Bernard St., Bakersfield, Calif. Bids Jan. 10. CD 12/28.

▲ **California Builders Co.,** Inc., 5525 Marshall St., Oakland, Calif., CA, **$1,079,900,** Ambrose High SCHOOL, near West Pittsburg, CONCORD, CALIF. Mount Diablo Unified School Dist., Concord, Calif. Bids Dec. 14, awarded Jan. 6. CD 12/27, under LB.

Heftler Constr. Co., 332 N. Rodeo Dr., Beverly Hills, Calif., CA, **$720,000,** 78 frame, stucco DWELLINGS, Elm and Rossylin Aves. in Tract 2098, FULLERTON, CALIF. Harvard Estates, 332 N. Rodeo Dr , Beverly Hills, Calif.

Madison Land Co., 1124 S. Beverly Dr., Beverly Hills, Calif. Owner Builds. **$374,262,** 49 stucco DWELLINGS in Tract 3429, MUSCOY, CALIF.

▲ **Jackmar Groves, Inc.,** Box 8115, Long Beach, Calif., CA, **$1,195,000.** 182 frame, stucco DWELLINGS, Duboyar and Maybank Aves., Hardwick and Silva Sts., LAKEWOOD, CALIF. Clyde Constr. Co., Haigen Constr. Co., & Oxial Constr. Co., Box 8115, Long Beach, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archt.

Colland Brothers, 1901 Valencia St., Santa Ana, Calif. Owner Builds. **$600,000,** 69 frame, stucco DWELLINGS, Tract 2278, SANTA ANA, CALIF.

▲ **Utah Constr. Co.,** 100 Bush St., San Francisco, Calif., CA, **$1,250,000.** GRAIN ELEVATOR, at Port of Stockton, STOCKTON, CALIF. Pacific International Rice Mills, c/o contractors. Marshall, Barr & Assocs., Lloyd Bldg., Seattle, Wash., engrs. Awarded Jan. 10.

Fred G. Borchardt, 1732 L St., Fresno, Calif., LB, **$576,000,** memorial AUDITORIUM, TULARE, CALIF. Tulare Memorial District, Tulare, Calif. Bids Jan. 10. CD 12/15.

Bishop, Younger & Bradley, 405 Sansome St., San Francisco, Calif., LB, $418,175, Elementary SCHOOL, UKIAH, CALIF. Ukiah Union Elementary School Dist., Ukiah, Calif. Bids Jan. 5. CD 12/27.

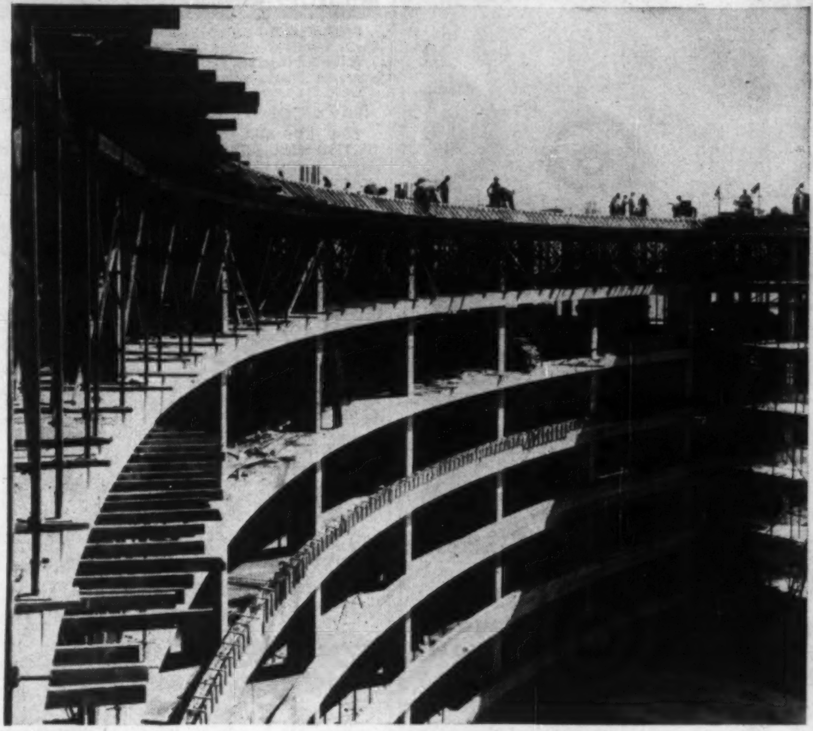
McDonald Brothers, 2620 N. Rosemead St., El Monte, Calif., CA, **$530,100,** 57 frame, stucco DWELLINGS in Tract 20341, WEST COVINA, CALIF. Wilmac Co., 2620 N. Rosemead St., El Monte, Calif.

(Continued on page 108)

(Advertisement)

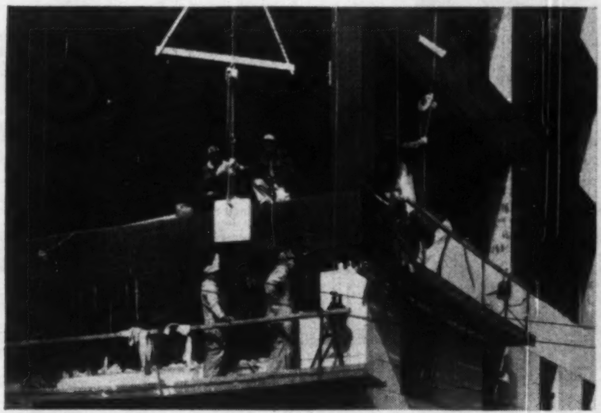
Scaffolding Methods . . .

by Patent Scaffolding Co.

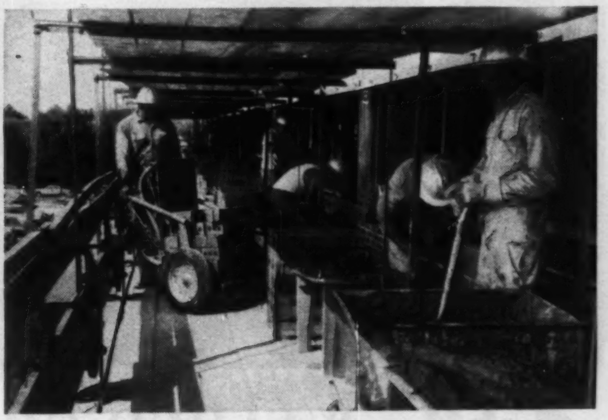


CURVES ON MIAMI BEACH—Three different types of PS Scaffolding can be seen doing three different jobs on the 14-story, $14,000,000 Fontainbleau Hotel that curves 440' along the ocean front at Miami Beach. While 5-ft. wide "Trouble Saver"® Shoring frames are supporting formwork for 10th floor, single post Burton's Shores are being used for reshoring on the lower floors. At right, "TubeLox"® Scaffolding makes runways for wheeling concrete from hoist tower. Taylor Construction Co., general contractor.

WORLD'S TALLEST—Materials for three 707-ft. (from foundations) chimneys being built for the Indiana-Kentucky Electric Corp. near Madison, Ind. are hoisted by "Gold Medal"® Steel Hoist Towers 721 ft. 6 in. high. Custodis Const. Co., chimney contractor.



TEAMED UP FOR SPEED—"Gold Medal" Junior Safety Swinging Scaffolds and a block and tackle stone-lowering arrangement keep stonesetting job moving at a rapid pace on the Prudential Life Insurance Bldg., Minneapolis. 15 of these light duty Scaffolding Machines, with 20-ft. platforms, keep men at correct working height as work advances. Block and tackle, hung from trolley beams on roof, rolls and lowers stone to men. Stonesetting contractor, Axel Ohman. General contractor, C. F. Haglin & Co.



TREND TO MECHANIZATION—A clear area for maneuvering buggy loaded with half-pallet (120 bricks) to masons' stations is provided by 8-ft. wide "Gold Medal" Safety Scaffolding Machines. Scaffolding Machines are set away from wall to give masons an unobstructed 20-in. platform. This specially-designed PS Scaffolding, required by palletizing and mechanized handling of masons' materials, is furthering the trend to more efficient operations. Job is Cedar Apts. Extension, Cleveland. Mason contractor, W. M. West & Son.

To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

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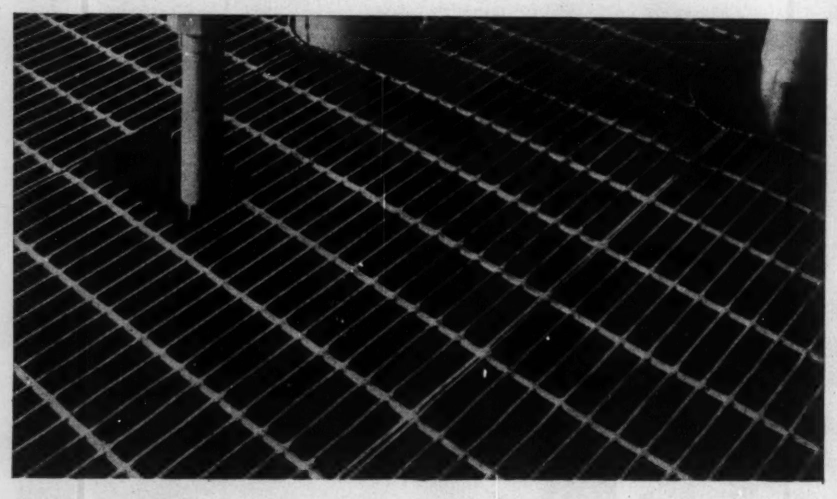

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(Continued from page 106)

CANADA

BIDS ASKED—BUILDINGS

Que., Valcartier—BARRACK BLOCK—BA 2/1—Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. 250-man barrack block, Army Station, $700,000. Plans deposit $100.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

BRITISH COLUMBIA—Dpt. Lands & Forests, Victoria,
Atomic Constr. Coal Ltd., 874 Alexander Rd., Lulu Is., Vancouver, B. C., CA **$348,998**, road work Caribou Electorial District, near Strathnauer, Proj. 4479, 10.32 mi. Naver Creek Road, Victoria.

▲ **C. A. Pitts Ltd.**, 30 Commercial Rd., Leaside, Toronto, Ont., LB **$1,790,980**, excavation and bldg. dam on Conestoga River, BRANTFORD, ONT. Grand River Conservation Comn., Box 605, Brantford, Ont. Bids Jan. 8. CD 12/6.

Len Ariss & Co., Ltd., 150 Surrey St. East, Guelph, Ont., CA **$82,027**, 3,100 ft. 60 and 66 in. corrugated metal sewer in Speedvale Ave., GUELPH, ONT. City, City Hall, Guelph, Ont. F. M. Woods, c/o owner, city engr. Awarded Jan. 7.

Dundas Constr. Co., 4 Jenet Ave., Islington, Ont., LB **$76,679**, Contracts 54-49 and 54-51, sewers and water mains at various locations in Islington, TORONTO, ONT. Etobicoke Twp., 4946 Dundas St. W., Islington, Ont. W. M. Swan, c/o owner, engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Wingold Constr. Co., Ltd., 2559 Eglinton Ave. W., Toronto, Ont., CA **$100,000**, 1 story, 80x120 ft., steel, concrete block FACTORY addn., T-shaped section 60x160 ft. and 60x80 ft., TORONTO, ONT. Alsco Products of Canada, Ltd., 191 Astonbee Rd., Toronto, Ont. J. Brenzel, 658 Spadina Ave., Toronto, Ont., archt.

Sam Forcillo, 571 Louvain St., Montreal, Que., Owner Builds, **$420,000**, 30 semi-detached BUNGALOWS, Lebel Blvd., MONTREAL, QUE. G. Parent, 2521 S. Germain St., Montreal, Que., archt.

▲ **Aure & Jacques Brunet**, 550 Cherrier St., Ile Bizard, Que. Owner Builds, **$3,000,000**, HOUSING DEVELOPMENT on new streets, Rivieres Des Prairies, MONTREAL, QUE.

Aure & Jacques Brunet, 550 Cherrier St., Ile Bizard, Que. Owner Builds, **$350,000**, HOUSING program, incl. 30 bungalows on Terasse Vaudreuil, VAUDREUIL, QUE.

Proposed Projects

WATER SUPPLY

▲ **Ia., Des Moines**—City, City Hall, feeder main system for Water Dept. **$1,694,000**. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

Minn., Winona—City, Bd. Municipal Wks., O. W. Cribbs, city engr., WW imprvs., incl. reservoir, wells. **$500,000**. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs.

Okla., Clinton—City, water supply. **$950,000**. V. V. Long & Co., Colcord Bldg., Oklahoma City, consult. engrs.

▲ **Tex., Sherman**—City, water treatment plant, **$200,000**; reservoir-dam, outlet works, spillway (for city domestic water supply), **$1,000,000**; elevated water storage, **$75,000**; water transmission line from reservoir to connection city distr. sys., **$375,000**. Forrest & Cotton, Praetorian Bldg., Dallas, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Calif., Los Angeles**—City, City Hall, **$60,000,000** bond election Apr. 5, sewage disposal plant at Hyperion. Lloyd Aldrich, c/o owner, engr.

Ind., Madison—Bd. P. Wks., Mayor Chas. Vaughn, chn., City Hall, sewage treatment plant addns. **$600,000**. Atkinson Eng. Co., Greensburg, consult. engr.

▲ **Ia., Sioux City**—City, City Hall, sewage disposal system. **$1,000,000**.

BRIDGES

IDAHO and OREGON—State Hy. Comn., Boise, Idaho, and Oregon State Hy. Comn., Salem, Ore.
Canyon Co., Idaho and Malheur Co., Oregon—replacing bridge over Snake River at Nyssa, Ore. to replace structure which collapsed, **$500,000**.

▲ **Tex., Dallas**—Dallas Co., Court House, grade separations at Irving Blvd., **$750,000**; low water bridge across Trinity River on Sylvan-Wycliff connection to Maple Ave., **$1,275,000**. R. H. Clinger, county engr.

▲ **QUEBEC**—Dpt. Rds., Quebec City,
Seven Islands—900 ft. bridge over Bersimis River between Baie Comeau and Seven Islands. **$1,250,000**.

STREETS AND ROADS

▲ **Tex., Dallas—Dallas Co., Court House,**
Belt Line Rd.—**constr. addnl. 48 mi.** project proposed to encircle the city, **$2,968,646**.
Centerville-Ferguson Rd. completion, **$693,448**.
Dowdy-Ferry Rd. completion, **$750,000**.

Hampton-Inwood Rd. completion from N.W. Hy. to Belt Line on north end and Kiest Blvd. to Hy. 67 on south end, $1,655,400.
Illinois St. Rd. completion, $378,486.
Malloy Bridge Rd. completion, $734,000.
Military Dr. Proj. completion (making divided 6-lane road), $758,417.
Skillman Rd. completion, Dallas to Garland, $490,333.
addnl. farm to market roads throughout sects. of county, $1,000,000.
addnl. road surf. in various sections of county, $1,000,000.
street and drainage in West Dallas, $731,555. R. H. Clinger, county engr. CD 2/27/50.

Tex., **Houston**—H. R. Cullen & Assocs., City Natl. Bank Bldg., 30-acres paving in stockyards industrial area, $750,000. Lockwood & Andrews, 904 Union Natl. Bank Bldg., Houston, consult. engrs. CD 12/28.

▲ **WASHINGTON**—State Hy. Comn., Olympia,
Cowlitz Co.—re-route Primary State Hy. 12 from Longview to junction with Primary State Hy. 1 in Kelso, with railroad overcrossing in Longview, bridge over L.P.N. RR. and 3 St. in Longview, $3,148,200.
Kitsap Co.—wid'n., re-route Primary State Hy. 13, Narrows Bridge to Purdy and Sinclair inlet south, $1,468,600.
wid'n., resurf., realign, Port Orchard to Harper and Manchester, $397,300.
wid'n. from junction with Hy. 9 to Port Orchard $2,922,900.
wid'n. Primary State Hy. 21 from junction with Primary State Hy. 14 to Kingston and Keyport, $2,603,400.
Lewis Co.—reconstr., wid'n. Primary State Hy. 5, White Pass branch, from Chehalis to Silver Beach with new bridges, $3,724,100;
new alignment for same highway with resurf., wid'n. Kosmos to Elbe, $1,560,100.
Mason Co.—re-route Primary State Hy. No. 9 Shelton to Mud Bay junction with new bridges and railroad overcrossing, $4,651,700;
Pacific Co.—imprv. Primary State Hy. 12 from Johnson's Landing to Megler, $1,453,900.
Pierce Co.—wid'n., resurf. Primary State Hy. 5 in Puyallup, with railroad undercrossing and bridge over Puyallup River, $1,711,600;
constr. new route, Sumner to King Co. Line with bridge over Derringer Spillway, $1,178,900.
new route for Primary State Hy. No. 1, with undercrossing at Dupont and Dupont intersection and overcrossing at Lewis Dr., $1,439,800.
resurf. same highway, Scott Rd. thru Tacoma to King Co. line, $1,369,000.
realign, resurf., wid'n. Primary State Hy. 5 Renton to Chinook Pass, $1,144,200.
Tacoma to Mount Rainier $1,600,300.
wid'n. from Tacoma to Puyallup $660,500.
Thurston Co.—controlled access highway with frontage road and 5 traffic structures on Primary State Hy. No. 1 St. Martins College to Old Nisqually Rd., $1,621,000. W. A. Bugge, state hy. dir.

EARTHWORK, WATERWAYS

▲ **Calif., Martinez**—Contra Costa County Flood Control & Water Conservation District, Court House, drop structures or dams in San Ramon and Las Trampas Creeks, Contra Costa Co. $12,800,000.

▲ **Tex., San Angelo**—City, dam constr. for controlling floodwaters on Lake Nasworthy Watershed. Over $1,000,000. Forrest & Cotton, Praetorian Bldg., Dallas, consult. engrs.

AIRPORTS

† **Tenn., Nashville**—RADAR—AIRCRAFT DETECTION STATION—U. S. Eng., 303 U. S. Court House, radar-aircraft detection station to be manned by 100 officers and airmen to detect aircraft approaching defense locations in area, of semi-mobile type. $500,000.

▲ **Utah, Hill Air Force Base**—AIRBASE UTILITIES, etc.-Dir. of Proc. & Prod., OPPSS, Hill Air Force Base, Ogden, utilities, $474,900; warehouse, $167,700; warehouse, $696,900; security fence, $33,300; shop, $42,900; fire station, $151,900. CD 2/10.

▲† **Alaska**—HANGAR, etc. U. S. Eng., Anchorage, hangar and shop, Elmendorf Air Force Base. $2,350,000. CD 11/26/52.

▲ **N. S., Dartmouth**—HOUSING UNITS—Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, 100 housing units for married personnel of H.M.C.S. "Shearwater" Naval Air Base, Eastern Passage. $1 000,000. C. F. Emms, c/o owner, engr.

▲ **Yukon Territory, Whitehorse**—HOUSING—Central Mortgage & Housing Corp., 400 Kensington Bldg., Winnipeg, Man., 341-unit housing for permanent married quarters, $4,000,000; 3 barracks, blocks on ordnance bldg., central heating plant and sewer services, R.C.A.F. Station, $1,800,000.

PUBLIC BUILDINGS

Calif., Camarillo—RESIDENCE UNITS—State Div. Architecture, P. Wks. Bldg., Sacramento, nursing employees residence units, Camarillo State Hospital, for Dpt. Mental Hygiene. $911,000.

▲ **Calif., Costa Mesa**—HOSPITAL—State Div. Architecture, P. Wks. Bldg., Sacramento, continuation of initial phase of construction, Fairview State Hospital. $2,221,000.

▲ **Calif., Fresno**—OFFICE, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, district office bldg., shop bldg., laboratory bldg. and maintenance shops, for Dpt. P. Wks. $1,235,000.

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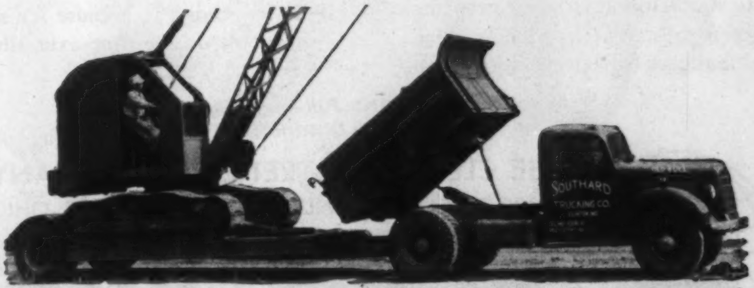

Divided bed, tilt deck trailer with gooseneck

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CLEVELAND

Calif., Imola—WARD ADDN., etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, tubercular ward addn., **$517,000;** commissary and supply warehouse, **$97,500,** at Napa State Hospital.

▲ **Calif., Los Angeles**—OFFICES—State Div. Architecture, P. Wks. Bldg., Sacramento, constr. program for District VII, **$436,500;** addns. to District VII Office Bldg., for Div. Hys., Dpt. P. Wks. **$2,424,500.**

▲ **Calif., Norwalk**—KITCHEN, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, kitchen, **$1,496,500;** administration bldg., **$431,000;** storm drainage sys., **$241,000;** ward bldgs., **$5,566,000;** laundry, **$864,000;** enlarging boiler and auxiliaries, **$205,000,** at Metropolitan State Hospital.

Calif., Oakland—ARMORY—State Div. Architecture, P. Wks. Bldg., Sacramento, Type J armory, for Military Dpt. **$656,000.**

▲ **Calif., Pomona**—SCIENCE—State Div. Architecture, P. Wks. Bldg., Sacramento, science bldg., California State Polytechnic College, Kellogg Campus. **$1,800,000.**

▲ **Calif., Sacramento**—LABORATORY—State Div. Architecture, P. Wks. Bldg., Sacramento, headquarters laboratory bldg., for Dpt. P. Wks. **$1,381,800.**

▲ **Calif., San Jose**—GYMNASIUM ADDN., etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, men's gymnasium addn., **$526,000;** installing water pressure sys., **$65,000;** library addn., **$1,121,000;** science bldg., **$1,655,000;** classroom, **$1,284,000;** installing boiler, **$59,500,** all at San Jose State College.

▲ **Calif., San Luis Obispo**—ENGINEERING, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, engineering bldg., **$1,505,000;** agriculture, engineering and mechanics bldg., **$630,000;** physical education facilities, **$133,000;** site development, **$90,000,** at California State Polytechnic College, for Dpt. Educ.

▲ **Calif., Sonoma**—HOSPITAL, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, receiving hospital, **$950,000;** six ward bldgs., **$3,796,000,** at Sonoma State Hospital.

▲ **Calif., Stockton**—OFFICE—State Div. Architecture, P. Wks. Bldg., Sacramento, district office bldg. for Dpt. P. Wks. **$1,080,000.**

▲ **Calif., Vacaville** — AUDITORIUM, etc. — State Div. Architecture, P. Wks. Bldg., Sacramento, auditorium, maintenance, library and chapel wing and accessory facilities, at Medical Facility, **$1,516,000.**

▲ **Colo., Trinidad** — HOME FOR AGED — State, State Capitol Bldg., Denver, plans by T. H. Buell & Co., 730 14 St., Denver, state home for the aged. **$1,000,000.** Eugene D. Sternberg, 2364 E. 3 Ave., Denver, consult. engr. CD 2/19.

▲† **Conn., Middletown**—RESEARCH FACILITIES— U. S. Eng., 857 Commonwealth Ave., Boston, Mass., research facilities for the Air Force, known as Hartford Research Facility, Maromas Section near the Haddon Town Line. **$5,750,000.** Pratt & Whitney Aircraft, West Hartford, will operate.

Conn., Westport—SCHOOL—Town Bd. Educ., Town Hall, high school, North Ave. **$750,000.**

▲ **Ill., Collinsville** — SCHOOL — Collinsville Community Unit School Dist. No. 10, D. K. Darling, supt. Schools, voted **$1,050,000** bonds, elementary school, State Park Place, north of U.S. 40 and east of Black Lane; elementary school, adjacent to Collinsville High School; Collinsville High School addn. and Miller Elementary School addn.

Ill., Medinah—SCHOOL—High School District No. 108, 345 Bloomingdale Rd., Itasca, plans by Bradley & Bradley, 226 S. Main St., high school. **$750,000.**

▲ **Ind., Anderson** — SCHOOL — Anderson Twp. School Corp., 520 W. 11 St., plans by Arthur Henning, Anderson Bank Bldg., Junior-Senior High School, South Madison Ave. **$1,500,000.**

Ia., Britt—HIGH SCHOOL—Bd. Educ., Britt, plans by Smith-Voorhees-Jensen-Silleto & Assocs., 206 Davidson Bldg., Des Moines, high school. **$550,000.**

Ia., Estherville—SCHOOL—Bd. Educ., Estherville, voted **$365,000** bonds Dec. 20, high and grade schools.

† **Me., Bangor**—DORMITORY—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., plans by Cram & Ferguson, 248 Boylston St., Boston, Mass., airmen's dormitory, Dow Air Force Base. **$500,000.** CD 11/23.

Me., Brewer—SCHOOL—Trustees Brewer School Dist., Robert H. Barbour, chn., c/o Supt. Schools, 5 Somerset St., high school adjacent to auditorium. **$500,000.**

▲ **Mass., Acton**—SCHOOL—Town, High School, plans by Perley F. Gilbert & Assoc., Inc., 43 Central St., Lowell, high school. **$1,400,000.** CD 5/18.

Mass., Canton — SCHOOL — Town, High School Bldg. Comn., plans by Collens-Willis & Beckonert, 20 Newbury St., Boston, high school. **$500,000.**

Mass., Westport—SCHOOL—Town, Bd. Educ., Town Hall, high school. **$500,000.**

▲ **Mich., Detroit** — SCHOOL — City, Bd. Educ., 1354 Broadway, plans by Giffels & Vallet, Inc. & L. Rossetti Associated Engineers & Architects, 1000 Marquette Bldg., Northwest High School, first unit **$1,750,000.** Total est. $5,000,000. CD 4/20.

Mich., Detroit—SCHOOL—City, Bd. Educ., 1354 Broadway, plans by Shreve, Walker & Assoc., 600 Woodward Ave., Mettetal School addn. **$500,000.**

Mich., Oak Park—COMMUNITY-LIBRARY—City, Louise Shaw, clk., plans by George Bery, 8440 Nine Mile Rd., 2 story community-library. **$600,000.**

▲ **Mich., Peck**—SCHOOL—Elk Twp., Bd. Educ., Peck, plans by Wyeth & Harmon, Inc., 1602 Military St., Port Huron, school addns., alterations. **$1,500,000.**

Minn., Kerkhoven—SCHOOL—Bd. Educ., E. W. Solyst, supt., plans by E. H. Schmidt & Co., Mankato, several school addns. **$500,000-$600,000.** CD 12/29.

▲ **Minn., Lake City**—SCHOOL—Bd. Educ., LeRoy Wickstrom, clk., plans by Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, schools. **$1,000,000.**

Mo., Richmond—HOSPITAL—Ray Co., Richmond, plans by J. F. Lauck, 6225 Brookside St., Kansas City, Mo., Ray County Hospital. **$436,500.** CD 8/11.

▲ **Mo., St. Louis**—HOUSING—St. Louis Housing Auth., John J. O'Toole, exec. dir., 901 Washington Ave., Zone 1, two 13 story apartment 750 units designed for aged persons, Proj. Mo.1-8. **$4,800,000.** CD 1/9/46.

▲ **Mont., Great Falls**—SCHOOLS—Great Falls School Dist., **$4,000,000** bond election Apr. 2, incl. high school gymnasium, several schools. McIver, Hess & Hougsjaa, Box 1945, Shanley & Shanley, Barber-Lydiard Bldg., Bordeleau & Pannell, 410 Eighth St. N. Dave Davidson, Great Falls, Page & Werner, Great Falls, Holland & Lund, Great Falls and Van Teylingen, Knight & Van Teylingen, Medical Arts Bldg., archts. CD 10/11.

▲ **N. J., Nutley**—SCHOOL—Bd. Educ., 325 Franklin Ave., plans by Micklewright & Mountford, 72 Ewing St., Trenton, Junior High School addn. **$1,800,000.** CD 8/7/47.

N. D., Minot—HIGH SCHOOL—Bd. Educ., Mrs. Hazel Smallwood, clk., Minot, plans by Brunner, Hoeffel & Bohrer, Minot, Junior High School. **$600,000.** G. H. MacMillan, 3018 E. Lake St., Minneapolis, Minn., structural engr.

▲ **O., Dayton**—SCHOOLS—Bd. Educ., 232 N. Main St., school expansion program. **$20,000,000.** CD 11/12/51.

Tex., Brownsville—SCHOOLS—Brownsville Independent School Dist., Brownsville, bond election Jan. 22, addnl. school classrooms and new Junior High School. **$500,000.** CD 10/8/52.

Tex., Clarendon—SCHOOL—Clarendon Independent School Dist., c/o Horner Estlak, pres. Bd., plans by Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, high school. **$500,000.**

Tex., Wharton—SCHOOLS—Wharton Independent School Dist., Wharton, plans by Reber & Davidson, engrs.-archts., Box 407, masonry new school and school addn. **$600,000.** I. A. Naman, 3305 Montrose Blvd., Houston, consult. engr. CD 9/14.

Utah, Price—HOSPITAL—Carbon Co. Com. and City, Price, voted bonds Dec. 6, hospital addn. **$700,000-$900,000.** Fetzer & Fetzer, 415 Zion Saving Bldg., Salt Lake City, archts.

Utah, Springville—HIGH SCHOOL—Nebo School Dist., 50 S. Main St., Spanish Fork, plans by Claude S. Ashworth, 44 West 2nd North St., Provo, Junior High School. **$800.000.**

Wash., Rochester—SCHOOL—School Bd., Rochester, voted bonds Jan. 5, high school. **$500,000.** Johnson & Botesch, First Natl. Bank Bldg., Everett, archts. CD 12/15.

Alta., Lethbridge—SCHOOL—Lethbridge Public School Bd., Lethbridge, plans by Meech, Mitchell, Robins & Assocs., 529 Sixth St. South, constr. Gilbert Patterson Junior High School. **$592,000.**

▲ **Ont., Kitchener**—HOME FOR AGED—Waterloo County Home for the Aged, Amos Wilkinson, chn., Kitchener, plans by Jenkins & Wright, 233 Queen St. E., part 1 and 2 story X-shaped, split-level home for the aged on farm site off King St. E. **$2,000,000.**

Sask., Regina—HOSPITAL EXPANSION—Regina General Hospital Bd., Regina, hospital expansion incl. administration bldg., laboratories, hospital addn. **$600,000.** CD 12/3/46.

COMMERCIAL BUILDINGS

Calif., Burbank—HOSPITAL, etc.—Burbank Hospital, 466 E. Olive St., plans by Albert C. Martin & Assocs., 333 S. Beaudry St., Los Angeles, 34,000 sq. ft., Burbank Hospital addn., and 15,000 sq. ft. hospital alterations **$500,000.**

Calif., Downey — DWELLINGS — Avondale Development Corp., 9363 Wilshire Blvd., Beverly Hills, plans by Roy L. Kiter & Assocs., 3321 Tweedy Blvd., South Gate, 49 frame, stucco dwellings, Pico Vista Dr. in Tract 14546. **$500,000.**

▲ **Calif., Norwalk**—DWELLINGS—Shaw Constr. Co., 14328 S. Valley View Ave., La Mirada, plans by L. C. Major & Assocs., 11015 S. Paramount Blvd., Downey, 186 frame, stucco dwellings, in Tract 1818 Orange County and Tract 19401 Los Angeles County, **$1,500,000.**

▲ **Calif., Puente**—DWELLINGS—West Covina Properties, 1401 W. Valinda St., plans by Ayres & Fiege, 4253 Coldwater Canyon, North Hollywood, 146 frame, stucco dwellings. **$1,500,000.**

▲ **Calif., Santa Ana**—DWELLINGS—M. J. Brock & Sons, Inc., 2894 Rowena Ave., Los Angeles, plans by Wm. A. Brady, 962 N. La Cienega Blvd., Los Angeles, 129 frame, stucco dwellings. **$1,260,000.**

▲ **Calif., Vallejo**—DWELLINGS—Myers Brothers, 3407 San Fernando Rd., Los Angeles, plans by Wm M. Bray, 962 N. La Cienega Blvd., Los Angeles, 400 frame, stucco dwellings. **$3,000,000.**

▲ **Colo., Denver**—HOMES, etc.—Turnpike Land Co., Inc., c/o K. C. Ensor, 6826 E. 23 Ave., 6,000 brick homes, shopping centers, office bldgs., parks, churches and schools, oulder-Denver Turnpike near Broomfield. **$100,000,000.**

Conn., Cheshire—RESIDENCES—Lawrence Homes, Inc., Cheshire, plans by Arnold Lawrence, 19 Bliss St., Manchester, 76 residences, **$800,000.**

Conn., East Hartford—SHOPPING CENTER—Fred F. Leone & Sons, 735 Silver Lane, plans by Kane & Fairchild, 734 Asylum Ave., Hartford, shopping center, Silver Lane, **$500,000.** CD 1/5.

▲ **Conn., New Haven**—HOTEL—Sheraton Corp. of America, 470 Atlantic Ave., Boston, Mass., plans by Perry, Shaw & Hepburn, Kehoe & Dean, Park Square Bldg., Boston, Mass., hotel, 200-car parking garage below street, Church and Wall Sts. **$3,700,000.** CD 10/30/53.

▲ **Ill., Morton Grove**—SHOPPING CENTER—Arthur T. McIntosh, 105 W. Madison St., Chicago, Zone 2, plans by Carl M. Teutsch, 1105 W. Lawrence Ave., Chicago, shopping center, Waukegan Rd. and Route 58, **$3,000,000.**

Ind., South Bend—NURSES HOME—Memorial Hospital of South Bend, N. Main and N. Navarre Sts., plans by Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago 3, Ill., nurses home, **$800,000.**

▲ **La., Shreveport**—HOSPITAL—Sisters of Charity, Rev. Mother Mary Elizabeth, 941 Margaret Place, plans by Neild-Somdal, 960 Jordan St., 9 story, bsmnt., brick, steel, concrete Schumpert Hospital, Margaret Place and Warrington Place, **$5,000,000.**

Me., Lewiston—STORE—S. S. Kresge Co., Kresge Bldg., Detroit, Mich., store addn., Lisbon and Park Sts. **$500,000.**

Mass., Avon—BANK—Avon Cooperative Bank, Goeres Square, Avon, plans by Haldeman & Jacoby, 153 Main St., Brockton, brick, pumice bank, Goeres Square, **$500,000.**

▲ **Mass., Boston**—CLASSROOMS and LABORATORY—Northeastern University, 360 Huntington Ave., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., classrooms, laboratory bldg. **$1,500,000.**

▲ **Mass., Boston**—HOTEL—Sheraton Corp. of America, 870 Seventh Ave., New York 19, N. Y., plans by Perry Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., 15 story, 350-room hotel, Church and Wall Sts. **$5,000,000.**

Minn., Jackson—HOSPITAL—Sisters of Charity, Mother Lucia, mother superior, Jackson, plans by Hills, Gilbertson & Hayes, 6009 Wayzata Bldg., Minneapolis, 2 story, bsmnt., hospital, **$500,000.**

Mo., St. Louis—POST OFFICE—Lex-Way Corp. of Clayton, Clayton, plans by Fred C. Steinberg, 4 S. Central Ave., Clayton, Zone 5, brick, steel, concrete 48,000 sq. ft. branch post office and parking garage, 62,000 sq. ft. paved parking area, Kingshighway and Lexington Ave. **$650,000,** U. S. Post Office Dpt., lessee.

Neb., Fremont — COLLEGE BLDGS. — Midland College, Fremont, two college bldgs. **$800,000.**

▲ **N. Y., Brighton**—TABERNACLE, etc.—Faith Tabernacle, Inc., James Power, chn. Bldg. Comn., Grant St., Rochester, plans by Chiaverini & Turiello, 507 Broad-

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way, Revere, Mass., tabernacle, 1st phase, chapel 2nd phase, auditorium. **$3,000,000.** CD 5/15/53.

▲ **N. Y., New York**—APARTMENT—Aaron Simon & Harry Taffel, 477 Madison Ave., New York, Zone 22, plans by George G. Miller, 125 W. 45 St., New York, Zone 19, apartment, 1260-1274 Second Ave. **$2,500,000.**

▲ **N. Y., Brooklyn**—SCHOOL, etc.—R. C. Parish of St. Thomas Aquinas, 1550 Hendrickson St., plans by Severud-Elstad-Krueger, 415 Lexington Ave., New York, Zone 17, 3 story parochial school and residence for brothers, 1992-2024 Flatbush Ave. **$1,000,000.** CD 11/15.

▲ **N. Y., New York**—CHURCH, etc.—Archdiocese of New York, 451 Madison Ave., Zone 22, plans by Voorhees, Walker, Foley & Smith, 101 Park Ave., Zone 17, church and parish house, 65 Park Ave. **$1,000,000.**

▲ **N. Y., New York**—OFFICE—Knickerbocker Development Co., 14 W. 48 St., Zone 19, plans by Emery Roth & Sons, 575 Madison Ave., Zone 22, 35 story office bldg., Avenue of Americas between 51 and 52 Sts. **$15,000,000.** CD 8/4/53.

▲ **Pa., New Castle**—CHURCH, etc.—St. Joseph's Catholic Church, South Jefferson St., church, school, rectory and convent on east side of city. **$1,000,000.**

▲ **S. C., Columbia** — HOMES — T. F. Barker & Sons, 1306 Sunset Blvd., West Columbia, 200 homes in Arcadia-North Trenhalen Sect. of Columbia. **$4,500,000.**

▲ **Tex., Dallas**—CO-EDUCATIONAL SCHOOL, etc.—The Catholic Diocese of Dallas and Fort Worth, 2122 Kidwell St., Dallas, another co-educational high school, 22½ acre site in Casa View Area, Peavy and Ferguson Sts., **$1,100,000;** high school in Oak Cliff Area, **$750,000.**

Tex., Fort Worth—LIBRARY—Southwestern Baptist Seminary, c/o Dr. Williams, pres., Seminary Dr., plans by Easterwood & Easterwood, 517 N. P. Anderson Bldg., 3 story each, brick, tile, stone, library addn. and 2 wings, **$750,000.** CD 10/6/48.

Tex., Grand Prairie-Arlington—HIGH SCHOOL—The Catholic Diocese of Fort Worth-Dallas, 2122 Kidwell St., Dallas, high school, 120-acre tract between the two towns almost along the Beltline Road. **$850,000.**

Tex., Lubbock—EDUCATION—First Methodist Church, M. Alderson, chn. Bd., Lubbock, plans by Wyatt C. Hedrick Co., 1200 T & P Bldg., Fort Worth, 2 story, full bsmnt., approx. 60,000 sq. ft. brick, tile, steel frame, built-up roof education bldg., air-conditioned. **$650,000.**

Wash., Seattle—SUPERMARKET, etc.—M-B Investment Co., Lloyd Bldg., Zone 1, plans by Johnston & Campanella, Polson Bldg., Zone 4, 24,000 sq. ft. supermarket and shopping center, Renton Ave. and 76 Ave. S. in Skyway Park, **$500,000.**

▲ **Que., Pointes Aux Trembles**—HOUSING—R.C.A.F. Constr. Ltd., 8602 de L'Epee Ave., 200-unit housing program, **$2,500,000.**

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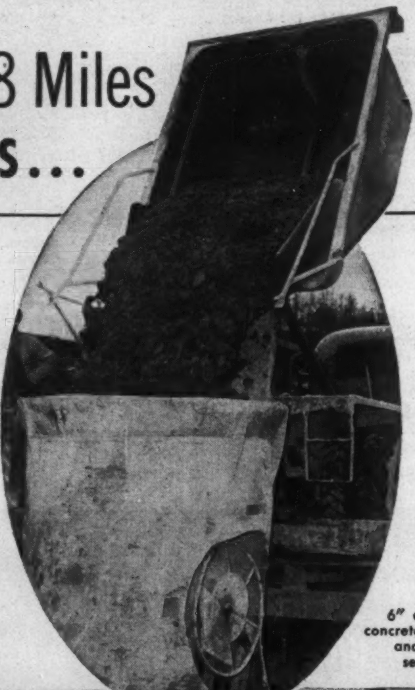

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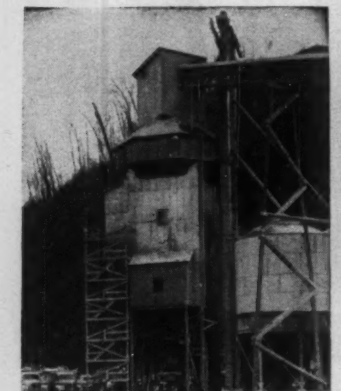

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INDUSTRIAL BUILDINGS

▲ **Colo., Denver**—FACTORY—Sundstrand Machine Toll Co., 2555 11 St., Rockford, Ill., plans by Olsen & Urbsin, consult. engrs.-archts., 5 S. Wabash St., Chicago, Ill., aircraft equipment factory, **$5,000,000.**

Me., Bangor—FACTORY—Old Town Shoe Co., 449 Main St., Old Town, plans by Isidor Richmond & Carney Goldberg, consult. engrs. and archts., 16 Arlington St., Boston, Mass., shoe factory, Hammond St. **$500,000.** CD 2/2/51.

▲ **Mo., St. Charles**—PLANT—Sterling Aluminum Products Co., Horace Duncan, pres., 2925 N. Market St., St. Louis, Zone 6, 1 story, 250,000 sq. ft. plant on 120 acre site near north limits of here, **$3,000,000.**

Mass., Dedham—WAREHOUSE—Atlantic & Pacific Tea Co., 530 Atlantic Ave., Boston, warehouse, Westwood Section, **$600,000.**

▲ **N. C., Hickory**—PLANT—General Electric Co., River Rd., Schenectady, N. Y., plans by Robert & Co., Inc., archt.-engr., 96 Poplar St. N. W., Atlanta, Ga., 400,000 sq. ft. plant to manufacture distribution transformers to cut down high voltage transmission, to low voltage for private homes. **$20,000,000.** CD 1/5.

▲ **Tex., Baytown**—REFORMING UNIT—Humble Oil & Refining Co., Humble Bldg., Houston, another reforming unit at existing refinery. **$3,750,000.**

▲ **Tex., Houston**—PLANT—Gray Tool Co., 6102 Harrisburg St., plans by Wyatt C. Hedrick, archt.-consult. engr., 5201 Fannin St., plant expansion. **$1,000,000.** CD 12/1/52.

▲ **Tex., Midland**—PLANT, etc.—Cities Service Oil Co., Midland Tower Bldg., and Forest Oil Corp., 522 W. Ohio St., gas processing plant, 50 m. cu. ft. casinghead gas production daily capacity, **$6,837,000;** gas lines in vicinity of plant, **$110,000;** water sys. **$45,000.**

Tex., Orange—COMPRESSOR STATION—Texas Gas Corp. and Texas Gas Pipe Line Corp. (subsidiary), Prudential Bldg., Houston, large compressor station, near here. **$575,000.**

▲ **Ont., Kitchener**—PLANT—Dominion Rubber Co., 550 Papineau Ave., Montreal, Que., plans by Prack & Prack, 310 Main St. E., Hamilton, plant extension with 3 story unit, 100x220 ft. for foam rubber products mfg. **$2,000,000.** CD 1/17/46.

Ont., Toronto—FACTORY—Parker Pen Co. Ltd., 154 University Ave., 70,000 sq. ft., factory, 11-acre site in Don Mills Development, northeast Toronto surburban area on Greenbelt Drive. **$600,000.**

Que., Montreal—WAREHOUSES, etc.—Alexis Nihon, 6020 Cote de Liesse Rd., plans by F. Consiglio, 1201 Guy St., 2 warehouses and offices Cote de Liesse Rd., incl. cafeteria. **$500,000.**

UNCLASSIFIED

Calif., Del Mar—EXHIBIT—State Div. Architecture, P. Wks. Bldg., Sacramento, exhibit bldg., 22nd District Agricultural Assn. **$500,000.**

▲ **Calif., Los Angeles**—SPORTS ARENA—Los Angeles Coliseum Comn., 3911 S. Figueroa St., 18,000 seat sports arena at Exposition Park. **$6,000,000.** Stiles & Robert Clements, 210 W. 7 St., consult. engrs.

▲ **Calif., Los Angeles**—SITE DEVELOPMENT, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, site development and temporary facilities, Los Angeles State College. **$1,000,000.**

Colo., Rifle—TROUT HATCHERY—Colorado Game & Fish Dpt., 1530 Sherman St., Denver, plans by Damon Runyan, engr. and archt., 6915 Lakewood Place, Lakewood, trout hatchery second increment, incl. raceways, small conversion dam, piping, small utility bldg., several residences. **$600,000.**

▲ **Missouri**—DISTRIBUTION SYSTEM—Union Electric Co. of Missouri, 314 N. 12 Blvd., St. Louis, Zone 1, expansion and imprv. distr. sys. incl. more power at Page Station, increased capacity Watson Sub-station two new 138,000 volt transmission lines, linking Mecamec Plant to MacKenzie switching station and Page Station, etc., St. Louis and St. Louis County, **$37,500,000.**

▲ **Oklahoma**—RURAL DISTRIBUTION LINES—Western Farmers Electric Co-operative, Anadarko, 174 mi. electric transmission line and sys. imprvs., Comanche Co. **$1,424,000.**

▲ **Ore., Portland**—ZOO—City, City Hall, plans by Lawrence, Tucker & Wallmann, Failing Bldg., zoo. **$3,800,000.** L. G. Apperson, City Hall, engr. CD 5/26.

▲ **Texas and Louisiana**—GAS LINE—Texas Gas Corp. and Texas Gas Pipe Line Corp. (subsidiary) Prudential Bldg., Houston, Tex., 12¾ in. gas lines from Main St. in Orange County, Tex., to Cameron Parish, La. incl. crossing Sabine River **$1,850,000;** field gas pipe line gathering system, Orange, Tex. **$375,000.**

▲ **Texas**—RAILWAY LINE—Panhandle & Santa Fe Ry. and the Kansas City, Mexico & Orient Ry., c/o Atcheson, Topeka & Santa Fe Railway System, T. A. Blair, ch. engr. (Sys.), 80 E. Jackson Blvd., Chicago 4, Ill., 20 mi. standard guage railway line from Orient's main line at Maryneal to Silver, Coke, Mitchell and Nolan Counties. **$7,000,000.**

▲ **Ont., Toronto**—SUBWAY—City, City Hall, rapid transit eastwest subway and open cut-system possibly along or close to Bloor St. **$120,000,000.** CD 10/6/43.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
February 1 Massachusetts

STREETS AND ROADS
February 1 Massachusetts

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
Gilbane Building Co., 90 Calverly St., Providence, R. I. LB **$1,263,085.** Contr. No. 51-051 Quaboag Valley Bridge, Palmer-Brimfield. Bids Jan. 17. CD 1/14.

BUILDINGS

LOW BIDS AND CONTRACTS

Torrington Bldg. Co., 187 Church St., Torrington, Conn., LB, **$527,700**, Junior-Senior High SCHOOL, Sheffield St., OLD SAYBROOK, CONN. Town School Bldg. Comn., Thomas Curran, chn., Old Saybrook, Conn. Bids Jan. 14. CD 12/2.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ **NEW JERSEY-PENNSYLVANIA**—BA 2/10—Delaware River Port Auth., Administration Bldg., Bridge Plaza, Camden, N. J.
Contract G-3, stringer spans substructure from Newton Creek to North-South Freeway of Bridge over Delaware River connecting Packer Ave., Phila., Pa. and Gloucester, N. J. Plans deposit $10; adv. ENR 1/27. CD 9/26/52.

BIDS ASKED—BUILDINGS

▲ **Md., Baltimore**—SCHOOL—BA 2/2—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, concrete, steel masonry Southern Junior High School addn. $2,000,000. Plans deposit $100, Hopkins & Burton, 10 E. Mulberry St., Zone 2, archts. CD 8/13/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Badgett Mine Stripping Corp.**, Box 347, Madisonville, Ky., CA **$1,372,800**, first project in the United States phase of the St. Lawrence Seaway, incl. removal of 3,880,000 cu. yd. earth from Richards Point, Croil Island and Long Sault Island sects. of the Long Sault Canal, approx. 2½ mi. northwest of Massena, NEW YORK. U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo 7, N. Y. CD 12/20, under LB.

▲ **Allis-Chalmers Mfg. Co.**, 50 Church St., New York, N. Y. CA **$5,051,461**, eight turbines;
Baldwin-Lima-Hamilton Corp., Chester Pike and Simpson St., Eddystone, Phila., Pa., CA **$5,086,190**, remaining eight turbines to be installed in Barnhart Island Power House, Long Sault Dam, NEW YORK. The Power Authority of The State of New York, 270 Broadway, New York 7, N. Y. CD 8/18.

▲ **Tecon-Grafe-Callahan**, 1201 Main St., Dallas, Tex., LB **$4,098,064**, delivery of crushed rock and manufactured sand by rail to the classification yard adjacent to the proj., near Massena, St. Lawrence Co. Spec. PA-5-11013, St. Lawrence Contr. No. P4, NEW YORK. The Power Authority of The State of New York, 270 Broadway, New York 7 N.Y. Bids Jan. 5. CD 12/22.

▲† **Arthur Venneri Co.**, 300 North Ave., Westfield, N. J. LB **$3,622,248.** housing and utilities, FYY 55, Plattsburgh Air Force Base, PLATTSBURGH, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Jan. 18. CD 1/6.

▲ **Horn Constr. Co.**, 2174 Hewlett Ave., Merrick, L. I., N. Y., LB **$1,942,850**, 25 piers for the substructure of North Terminal ramps (Section A) of Newark Bay-Hudson County Extension of N. J. Turnpike, Contract N-26A, Hudson Co., NEW JERSEY. New Jersey Turnpike Auth., Administration Bldg., New Brunswick, N. J. Bids Jan. 18. CD 1/4.

▲ **MARYLAND**—State Rds. Comm.,108 E. Lexington St., Baltimore,
Rea Constr. Co. & C. H. Lawson, Inc., Box 2015, Charlotte, N.C. CA **$1,907,668.** surf. 7.07 mi. Annapolis-Washington, Expressway, Contr. P 631-16-320, Prince George Co.

BUILDINGS

LOW BIDS AND CONTRACTS

Albany-Fenimore Corp., 166 Montague St., Brooklyn 2, N. Y. Owner Builds. **$800,000.** 5 story APARTMENT, 593-615 Albany Ave. and 687-715 Fenimore Ave., BROOKLYN, N. Y. CD 10/14.

Laner Realty Corp., 26 Court St., Brooklyn 2, N. Y. Owner Builds. **$600,000.** 59 family APARTMENT, 48-car GARAGE, 9801 Shore Rd., BROOKLYN, N. Y. CD 11/1.

1900 Management Corp., 80 Lefferts Ave., Brooklyn 25, N.Y. Owner Builds. **$910,000.** 11 story APARTMENT, 301-22 Beverly Rd., BROOKLYN, N.Y. CD 9/22.

Randell Properties, Inc., 1392 Utica Ave., Brooklyn 3, N. Y. Owner Builds. **$450,000.** 6 story APARTMENT, 1030 Ocean Ave., BROOKLYN, N. Y. CD 11/30.

▲ **Cord Meyer Development Co.**, 108-18 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$2,820,937.** 6 story APARTMENT, 72 Dr. and 112 St., FOREST HILLS, N. Y. CD 10/19.

▲ **Kalikow Constr. Corp.**, 16 Court St., Brooklyn 2, N. Y. Owner Builds. **$1,330,000.** 6 story APARTMENT, Pershing Crescent, west of Lander St., JAMAICA, N. Y. CD 3/4.

▲ **Gold Coast Realty Corp.**, 16 W. 46 St., New York 19, N.Y. Owner Builds. **$1,211,000**, APARTMENT, 431-39 E. 79 St. and 430-38 E. 80 St. and 493-1509 York Ave., NEW YORK, N.Y. CD 10/20.

Maran Constr. Co., Inc., 1910 Arthur Ave., New York 57, N. Y., LB **$612,000**, heating, sanitary, electric and refrigeration work for INFIRMARY BLDG. No. 10, Willowbrook State School, STATEN ISLAND, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Jan. 13. CD 11/30.

▲ **E. I. du Pont de Nemours & Co., Inc.**, du Pont Bldg., Wilmington, Del. Own Forces. **$2,800,000.** 1 story, 62,000 sq. ft., brick, steel rubber sales-service LABORATORY with 2 story OFFICE section, at Chestnut Run near WILMINGTON, DEL. Herman E. Fisher, c/o owner, field project mgr. CD 8/21/46.

▲ **Sherwood Gardens Homes**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N.Y. Owner Builds. **$2,000,000.** 90 HOUSES, 22-acre tract, Jerico Turnpike and Powells Lane, WESTBURY, N.Y.

William Robinowitz, 1433 Northgate Rd. N.W., Wash., D. C. Owner Builds. **$456,000.** 38 brick detached HOMES in Robindale Development, WHEATON, MD. J. d'Epagnier, 1004 Ripley St., Silver Spring, Md., archt.

SOUTH

BIDS ASKED—BUILDINGS

Va., Norfolk—SCHOOL—BA 2/24—Norfolk County School Bd., 148 Granby St., elementary school, Elizabeth Manor, Cherokee Rd. $450,000. Plans deposit $25. J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, archt. CD 12/13.

▲† **N. C., Fort Bragg**—HOSPITAL—BA About 3/24—U. S. Eng., 308 Customhouse, Wilmington, 9 story, rein.-con., masonry 500-bed permanent type hospital,

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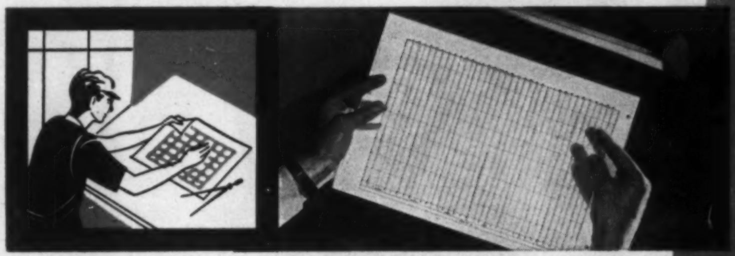

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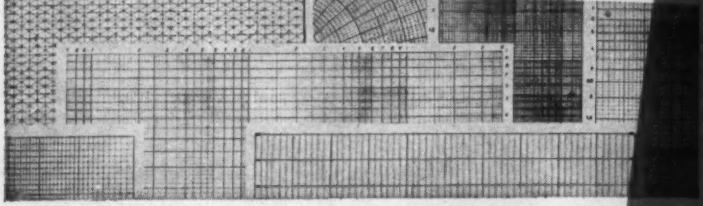

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CLUB ROSTER

DEPARTMENT OF WATER AND WATER SUPPLY
City of Albany, New York
NIAGARA MOHAWK POWER CORP. (GAS)
Albany, New York
ALEXANDRIA WATER COMPANY
Alexandria, Virginia
BUREAU OF WATER, DEPT. OF PUBLIC WORKS
Baltimore, Maryland
CONSOLIDATED GAS ELECTRIC LIGHT AND POWER CO.
Baltimore, Maryland
PUBLIC WORKS DEPT., WATER DIVISION
Boston, Massachusetts
BOSTON CONSOLIDATED GAS CO.
Boston, Massachusetts
PUBLIC SERVICE ELECTRIC & GAS CO
Bound Brook, New Jersey
BRIDGEPORT GAS LIGHT COMPANY
Bridgeport, Connecticut
DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATER
Buffalo, New York
SOUTH CAROLINA ELECTRIC & GAS CO.
Charleston, South Carolina
PEOPLES GAS LIGHT & COKE COMPANY
Chicago, Illinois
WATER WORKS DEPARTMENT
Chicago, Illinois
*CINCINNATI GAS & ELECTRIC CO.
Cincinnati, Ohio
*COLUMBIA WATER COMPANY
Columbia, Pennsylvania
BOARD OF WATER COMMISSIONERS
Detroit, Michigan
MICHIGAN CONSOLIDATED GAS CO.
Detroit, Michigan
FALL RIVER GAS WORKS COMPANY
Fall River, Massachusetts
CITY OF FREDERICK WATER DEPT.
Frederick, Maryland
*FREDERICK GAS COMPANY, INC.
Frederick, Maryland
GAS DEPARTMENT
City of Fredericksburg, Virginia
PUBLIC SERVICE COMMISSION
City of Halifax, N. S., Public Water Supply
THE HARTFORD GAS COMPANY
Hartford, Connecticut
*WATER BUREAU OF THE METROPOLITAN DISTRICT
Hartford, Connecticut
MUNICIPAL WATER WORKS
Huntsville, Alabama
*CITIZENS GAS & COKE UTILITY
Indianapolis, Indiana
BUREAU OF WATER
Lancaster, Pennsylvania
LOUISVILLE GAS & ELECTRIC CO.
Louisville, Kentucky
CITY OF LYNCHBURG WATER DEPARTMENT
Lynchburg, Virginia
NATURAL GAS SERVICE, INC.
Madison, Indiana
MOBILE GAS SERVICE CORP.
Mobile, Alabama
MOBILE WATER WORKS COMPANY
Mobile, Alabama
QUEBEC HYDRO-ELECTRIC COMMISSION
Montreal, Quebec

*PUBLIC WORKS DEPT., WATER-WORKS & SEWERAGE DIV.
Montreal, Quebec
WATERWORKS DEPARTMENT
City of Nashville, Tennessee
PUBLIC SERVICE ELECTRIC & GAS CO.
New Brunswick, New Jersey
NEW HAVEN GAS COMPANY
New Haven, Connecticut
NEW ORLEANS PUBLIC SERVICE, INC. (gas)
New Orleans, Louisiana
PUBLIC SERVICE ELECTRIC & GAS COMPANY
Newark, New Jersey
DEPT. OF WATER, GAS & ELECTRICITY
New York, New York
PHILADELPHIA ELECTRIC CO., GAS DEPT.
Norristown, Pennsylvania
CITY OF PAINESVILLE, GAS DIST. DEPT.
Painesville, Ohio
DEPT. OF PUBLIC WORKS, BUREAU OF WATER
Philadelphia, Pennsylvania
PHILADELPHIA GAS WORKS CO.
Philadelphia, Pennsylvania
BUREAU OF WATER, DEPT. OF PUBLIC WORKS
Pittsburgh, Pennsylvania
PLYMOUTH GAS LIGHT COMPANY
Plymouth, Massachusetts
POTTSVILLE WATER COMPANY
Pottsville, Pennsylvania
PROVIDENCE GAS COMPANY
Providence, Rhode Island
QUEBEC POWER COMPANY, GAS DIVISION
Quebec, Canada
BUREAU OF WATER
Reading, Pennsylvania
DEPT. OF PUBLIC UTILITIES (gas)
Richmond, Virginia
DEPT. OF PUBLIC UTILITIES (water)
Richmond, Virginia
ROCHESTER GAS & ELECTRIC CORP.
Rochester, New York
*DIVISION OF WATER & SEWERS
Sacramento, California
WATER & SEWERAGE DEPARTMENT
City of Saint John, N. B.
DEPT. OF PUBLIC UTILITIES, WATER DIVISION
St. Louis, Missouri
NORTH SHORE GAS COMPANY
Salem, Massachusetts
WATER DIVISION, Dept. of Engineering
Syracuse, New York
THE CONSUMER'S GAS CO. OF TORONTO
Toronto, Ontario
DEPT. OF PUBLIC WORKS
Troy, New York
CITY OF UTICA, BOARD OF WATER SUPPLY
Utica, New York
CITY OF WHEELING WATER DEPT.
Wheeling, West Virginia
WILMINGTON WATER DEPT.
Wilmington, Delaware
WATER DEPARTMENT
City of Winchester, Virginia
WATER DEPARTMENT
City of Winston-Salem, North Carolina
YORK WATER COMPANY
York, Pennsylvania
WATER DEPARTMENT City of Zanesville, Ohio

New Members in 1954

SERVES FOR CENTURIES

(Continued from page 113)

incl. outside utilities, misc. site imprvs., Inv. No. ENG-31-075-55-39. Est. $8,000,000. CD 12/8.

▲ **Fla., Jacksonville**—COURT HOUSE—BA After 5/10—Bd. Comrs., Duval Co. Court House, court house and jail. $6,000,000. CD 2/25/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

VIRGINIA—State Dpt. of Hys., Central Office Bldg., 1221 E. Broad St., Richmond,

Norfolk Contg. Co., P. O. Box 4525, Norfolk 6, Va. LB **$745,579.** underpass, approaches 0.09 mi. south of N & W underpass, 0.1 mi. north of N & W underpass, Rte. 460-A, State Proj. 7264-70-71, Fed. Proj. U-191-(2), city of Norfolk. Bids Jan. 18. CD 1/7.

† **VIRGINIA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,

Nello L. Teer Co., Trust Bldg., P. O. Box 1131, Durham, N. C., CA **$877,490**, Proj. 1D5-131, paving, Colonial Parkway, James City Co. Bids Dec. 21, awarded Jan. 17. CD 12/27, under LB.

VIRGINIA—State Dpt. Hys., Central Office Bldg., 1221 E. Broad St., Richmond,

Slusher Constr. Corp., Box 1252, Roanoke, Va. LB **$118,736.** soil aggregate, bit. surf. tr. 7.19 mi. Int. Rte. 617 (west of Miner's Store), 7.19 mi. east of Int. 617, State Proj. 1352-05, F. Proj. S 669 (2), Lee Co.;

Adams Constr. Co., P. O. Box 60, Roanoke, Va. LB **$102,539.** b. conc. 0.77 mi. west of Tyler Ave. (Norwood St.), Rte. 11, State Proj. 1660-07-14, Fed. Proj. U 449 (13), city of Radford;

Birsch Constr. Corp., Box 6026, Milan Station, Norfolk, Va. LB **$149,274.** c. conc. 1.16 mi. south of SCL Portsmouth, Rte. 17, State Proj. 2064-06, Fed. Proj. F 264 (5), Norfolk Co. Bids Jan. 18. CD 1/17.

† **Peden Constr. Co., Inc.**, 52 Mayberry St., Greenville, S. C., CA **$562,760**, runway exten. and access taxiway, Pope Air Force Base, ENG-31-075-55-11, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Dec. 21. CD 12/30, under LB.

▲† **T. A. Loving & Co.**, Bank of Wayne Bldg., Goldsboro, N. C., LB **$2,265,467.** nine dormitories, three (700-man) mess and utilities, Seymour Johnson Air Force Base, ENG-31-075-55-31, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Jan. 13. CD 1/7.

▲† **Thompson & Street Co.**, 47 Trinity Ave. S.W., Atlanta, Ga., CA **$3,415,453**, three warehouses and railroad to warehouse, Robins Air Force Base, ENG-09-133-55-28, MACON, GA. U. S. Eng., 200 E. St. Julian St., Savanah, Ga. Bids Dec. 28. CD 1/12, under LB.

† **McDonough Constr. Co.**, 7 Baltimore Pl. N.W., Atlanta, Ga., CA, **$447,855**, airmen's dormitory Dobbins Air Force Base, ENG-09-133-55-16, MARIETTA, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Dec. 21. CD 11/19.

▲† **Ballenger Paving Co.**, Paris, S. C., LB **$4,194,208** airfield paving Hunter Air Force Base, ENG-09-133-55-21, SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Jan. 6. CD 12/16.

† **L. A. Tvedt, Contractor**, 10 North Main Bldg. Memphis, Tenn., CA, **$971,319**, pumping station 6, Central and Southern Florida Flood Control Project, CIVENG-08-123-55-20, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Dec. 21. CD 11/12.

▲† **Jefferson Constr. Co.**, 3129 Coral Way, Miami, Fla., CA, **$629,625**, warehouses, ENG-08-123-55-31. Bids Dec. 14. CD 11/5.

▲ **Joseph Mann**, 1959 71 St., Miami Beach, Fla., CA **$674,852**, engine build-up shop, ENG-08-123-55-33 Homestead Air Force Base, HOMESTEAD, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Dec. 28. CD 11/19.

† **Rainer & Cambron Constr. Eng.**, P.O. Box 6546, Orlando, Fla., CA, **$504,258**, operations bldgs., heater and swimming pool, Pine Castle Air Force Base, ENG-08-123-55-32, ORLANDO, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Dec. 21. CD 11/10.

▲ **ALABAMA**—State Hy. Dpt., W. G. Pruett, hy. dir., Montgomery,

A. E. Burgess Contg. Co., 3700 10 Ave. N., Birmingham, Ala. LB **$134,171.** roadway, bit. treatment 3.302 mi., FA-S 47 (1), and (2), Walker Co.,

Highway Builders, Inc., 1925 29 Ave. S. Homewood, Ala. LB **$105,733** base, bit. tr. 9.062 mi. road from Childersburg to Fayetteville, FA-S 88 (4), Talladega Co.,

Geo. A. Dozier, Contractor, 3946 Wares Ferry Rd., Montgomery, Ala and **J. W. Gwin Jr., Inc.**, 1803 Comer Bldg., Birmingham, Ala. LB **$522,717.** bit. tr. 6.752 mi. on part of Line Creek-Tuskegee Rd., F 92 (3), Macon Co.

L. J. Cousins, 56 S. Lewis St., Montgomery, Ala. LB **$171,819.** bit. tr. 2.882 mi. US-31 south of Brewton, F 96 (8), Escambia Co.,

E. J. Cobb Constr. Co., Box 175, Montgomery, Ala. LB **$182,727.** bit. tr. 9.416 mi. Bradley-Wing and Brooklyn-Andalusia Rd., FA-S-200 (4) and 469 (5), Covington Co.,

G & R Coal Co., Box 402, Harriman, Tenn. LB **$127,305.** bit. tr. 4.607 mi. road from Ala.-74 through McLarty to Marshall Co., FA-S-495 (2) Blount Co.

Newell Brothers Constr. Co., Hope Hull, Ala. LB, **$130,976.** bit. tr. 4.802 mi. from Brooklyn to Covington Co. line, FA-S-569 (4), Conecuh Co.

M. A. Evans Contr. Co., Rte. 1, Wetumpka, Ala. LB **$250,870.** bit. tr. 10.695 mi. from Talladega Co. line to Middleton, FA-S-578 (2) and 604 (2), Calhoun Co.

Raley Contg. Co., Box 156, Aberdeen, Miss. LB **$163,783.** bit. tr. 6.931 mi. from Lathrop northeast, SACP-3149-A, Pickens Co. Bids Jan. 7. CD 12/30.

Marion County Pipe Lines, Winfield, Ala., LB **$144,249**, Prop. "A" water filtration plant intake and raw water pumping station, GUIN, ALA. Water Works & Sewer Bd., Guin, Ala. Bids Jan. 7. CD 12/27.

▲† **R. P. Farnsworth & Co., Inc.**, 1515 S. Salcedo St., New Orleans, La. CA **$4,514,927.** permanent hospital, Keesler Air Force Base, BILOXI, MISS. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Jan. 13. CD 12/6.

▲ **Riley Stoker Corp.**, 122 S. Michigan St., Chicago, Ill. CA **$1,652,501.** steam unit;

Central Contg. Co., 3000 Crittenden Dr., Louisville, Ky. CA **$358,900.** spray cooling sys.;

Lummus Co., 626 Broadway, Cincinnati, O. CA **$252,836.** condensing equip. for 66,000 kw. GENERATING SYSTEM on Kentucky River, FORD, KY. East Kentucky Rural Electric Co-operative Corp., Winchester, Ky. Grand total $2,264,237. Bids Jan. 10, awarded Jan. 15. CD 9/15.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Southeastern Constr. Co.**, 301 W. 2 St., Charlotte, N. C., CA **$949,500**, rehabilitation and constr., Charlotte, Ordnance MISSILE PLANT, ENG-31-075-(Neg. 55-1) CHARLOTTE, N. C. Dpt. Defense, The Pentagon, Wash. 25, D. C. Western Electric Co. and Douglas Aircraft Co. Inc. will operate. CD 1/5 under LB.

▲ **T. A. Loving & Co.**, Bank of Wayne Bldg., Goldsboro, N. C., CA **$1,198,900**, four DORMITORIES, GOLDSBORO, N. C. State Hospital Bd. Control, Capitol Bldg., Raleigh, N. C. Bids Dec. 21. CD 1/3, under LB.

R. H. Pinnix, Gastonia, N. C., CA **$516,248.** YORK COUNTY OFFICE BLDG., ROCK HILL and AGRICULTURE BLDG., YORK, S. C. York County P. Bldg. Comn., York, S. C. Bids Jan. 5. CD 1/12, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Chicago — SHOPPING CENTER — BA 2/2 — Owner, c/o Clarence L. Dahlquist, archt., 1625 Glenview Rd., Glenview, shopping center, Devon and California Ave. $550,000. CD 9/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,

Campbell Constr. Co., Warren, O., CA **$919,731**, two service bldgs. in Mahoning Co.; CA **$929,735**, two service bldgs. in Portage Co.;

W. B. Gibson Co., 200 Chestnut Ave. N.E., Warren, O., CA **$1,002,743**, two service bldgs., Cuyahoga Co.;

Mosser Constr. Co., Freemont, O., CA **$979,000**, two service bldgs., Lorain Co.;

T. J. Hume Co., Lorain, O., CA **$961,000**, two service bldgs., Sandusky Co. (east);

Steinle-Wolfe, Inc., 128 N. Jefferson St., Fremont, O., CA **$959,000**, two service bldgs., Sandusky Co. (west);

Beacon Constr. Co., 102 Hano St., Boston, Mass., CA **$1,090,000**, two services bldgs., Lucas Co., CA **$1,050,000** two service bldgs., Williams Co., all foregoing along Ohio Turnpike. Grand total $7,891,209. CD 1/4, under LB.

George Sheaf & Co., 449 Neilston St., Columbus, O. CA **$640,495**, est. $992,000. Hueston Woods Dam to impound lake covering 500-acres and recreation area of 3,465 acres, at OXFORD, O. Ohio Parks Div., State Office Bldg., Columbus, O. CD 2/9/53.

▲ **Chapel & Amundson**, 708 S. Broadway, Green Bay, Wis., CA, **$2,920,000.** water supply, GREEN BAY, WIS. Green Bay Water Comn., Green Bay, Wis. City Council Jan. 4 voted to reaffirm the 1953 contract. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., engrs. CD 12/22, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Joseph Skilken & Co., 383 S. Third St., Columbus, O. CA **$508,850**, OPERATIONS ADMINISTRATION BLDG. at Strongsville, Cuyahoga Co., OHIO. Ohio Turnpike Comn., 139 E. Gay St., Columbus, O. CD 1/19, under LB.

▲ **Garwick & Ross, Inc.**, 990 W. Third Ave., Columbus, O. CA Approx. **$3,000,000.** 1 story, brick, steel, concrete PRODUCE WAREHOUSE, 2 m. cu. ft. storage space, COLUMBUS, O. Big Bear Stores Co., 770 W. Goodale St., Columbus, O. Charles W. Cloud, 931 W. Third Ave., Columbus, O., archt.

▲ **Knowlton Constr. Co.**, 106 N. Main St., Bellefontaine, O., CA **$1,196,650**, HOSPITAL, ADMIN. BLDG., DINING ROOM-KITCHEN, Marion Training School, MARION, O. Ohio Dpt. Mental Hygiene & Correction, State Dpts. Bldg., Columbus, O. Bids Nov. 26. CD 12/2, under LB.

▲ **Precision Housing Corp.**, 9720 Ridgewood Dr., Cleveland 29, O. Owner Builds. **$18,000,000.** 1,100 frame, masonry DWELLINGS, to be known as "Yorktown"; **$2,000,000**, 20-unit SHOPPING CENTER in Yorktown development, 500-car parking lot, PARMA HEIGHTS, O. F. A. Pease Eng. Co., 2063 E. 4 St., Cleveland 14, O., consult. engr.

▲ **A.B.C. Constr. Co.**, 5235 Winthrop Ave., Indianapolis, Ind., Owner Builds, **$1,000,000**, Section 4, 90 HOMES, Brookhaven Addition, INDIANAPOLIS, IND.

▲ **Huber, Hunt & Nichols**, Box 128, Indianapolis 6, Ind. CA Total est. **$5,000,000.** jet test engineer facilities, incl. model shop, assembly area, & test stands at Maywood PLANT, Tibbs Ave. and Raymond St., INDIANAPOLIS, IND. Allison Div., General Motors Co., General Motors Bldg., Detroit, Mich. CD 11/27/51.

▲ **Woodcrest Building Corp.**, 335 K of P Bldg., Indianapolis, Ind., Owner Builds, **$1,250,000.** 70 HOMES in Woodcrest, INDIANAPOLIS, IND.

▲ **Good Homes, Inc.**, 1025 Circle Tower, Indianapolis, Ind., Owner Builds, **$2,000,000**, 180 HOMES in Mooreville Road Subdivision, INDIANAPOLIS, IND.

▲ **Shadeland Realty Co.**, Lawrence, Ind., Owner Builds, **$2,000,000.** new section of HOMES, LAWRENCE, IND.

▲ **Van Camp Realty Co.**, Speedway City, Ind., Owner Builds, **$1,000,000**, group of new HOMES in Eagledale Addn., SPEEDWAY CITY, IND.

Hagerman Constr. Co., 400 Madison St., Chicago 6, Ill. LB **$700,000.** men's DORMITORY, VALPARAISO, IND. Valparaiso University, 651 College Ave., Valparaiso, Ind. Bids Jan. 5. CD 1/3.

▲ **Ceco Steel Products Corp.**, 1926 S. 52 St., Chicago, Ill. Own Forces. **$1,000,000.** 112,000 sq. ft. PLANT, 25 Ave. and Roosevelt Rd., Broadview, CHICAGO, ILL. CD 8/5/52.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

February 15, 16 Texas

STREETS AND ROADS

February 1 Colorado **February 15, 16 Texas**

† **Tex., Abilene**—THEATER—BA 2/14—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, theater, Abilene Air Force Base. $100,000-$500,000.

BIDS ASKED—BUILDINGS

▲† **N. M., Los Alamos**—HOUSING—BA 2/10—U. S. Atomic Energy Comn., Procurement Sec., Los Alamos, Group 17 housing, incl. 92 single, 2, 3 and 4 bedroom units in eastern area of Los Alamos Townsite, Inv. No. 291-55-4. $1,000,000-$1,200,000. Extended date. CD 1/6.

Minn., Stewartville—SCHOOL—BA 2/16—Bd. Educ., A. G. Wilson, clk., high school, $500,000. Plans deposit $40, H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 6/14.

▲ **Tex., League City**—HIGH SCHOOL—BA 2/16—Clear Creek Consolidated Independent School Dist. League City, steel brick high school, incl. four bldg. units, stadium and track, 80,000 combined sq. ft. between League City-Kemah. $1,000,000. George & Abel B. Pierce, 2200 Welch Ave., Houston, archts. Walter P. Moore 2 Pinedale St., and H. E. Bovay Jr., N. Esperson Bldg., Houston, engrs. CD 8/24.

▲ **Minn., Minneapolis**—SCHOOL—BA 2/17—Bd. Educ., G. R. Arneson, city purch. agt., 301 City Hall, 2 story, Southwest High School addn. alterations. $1,200,000. Plans deposit $25. Lang & Raugland, 802 Wesley Temple Bldg., archts. CD 5/4/50.

▲ **Tex., Dallas**—APARTMENT UNITS—Bids Asked—Genell, Inc., c/o Louis J. Hexter, 1312 Main St., Sect. 1, 35 luxury apartment units, $1,500,000; Sect. 2, 25 apartment units, $1,500,000. CD 12/15.

SOON LETS CONTRACT—BUILDINGS

Minn., Duluth—HOSPITAL—Sisters of St. Benedict, St. Mary's Hospital Group, 429 E. Third St., soon lets contract 9 story, bsmnt., 126x139 ft. addn. to St. Mary's Hospital Group, $900,000. Maguolo & Quick, 1004 Marquette Ave., Minneapolis, archts. CD 12/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Central States Constr. Co., Crosby, Minn. and **Megarry Bros.**, St. Cloud, Minn. CA **$565,671.** c. conc. 8.4 mi. between West Jct. TH 7 and East limits of Hutchinson, McLeod Co. CD 12/22, under LB.

Burnett Constr. Co., Box 336, Corous Christi, Tex. LB **$974,150**, est. $556,038, modification of Broadway Sewage Treatment Plant, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Jan. 12. CD 12/22.

Brodie Constr. Co., 764 N. Grand St., Amarillo, Tex. LB **$885,541.** 48 in. water main from Clarkwood Station to 36 in. main in Savage Lane, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Jan. 13. CD 1/6.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Thompson Constr., Inc.**, 5613 Chicago Ave., Minneapolis, Minn. Own Forces. **$6,000,000-$7,000,000.** 600 to 800 HOUSING, in Coon Rapids, Anoka Co., Anoka County Rd. A, northeast of Hys. 10 and 56, ANOKA, MINN. H. W. Fridlund, 6009 Wayzata Blvd., Minneapolis, Minn., archt.

▲ **Advance Constr. Co.**, 2218 University Ave., St. Paul, Minn. CA Approx. **$2,500,000.** HOUSING CA over **$1,000,000.** Northway SHOPPING CENTER

(Continued on page 118)

"WORLD'S LARGEST TRUCK"

VICKERS® HYDRAULICS

Dart Model 60 Truck is shown carrying full 75-ton payload.

This Dart behemoth with a gross vehicle weight of 240,000 lb is said to be the largest truck in the world. It has two engines totaling 700 horsepower. Everything about it is on a colossal scale.

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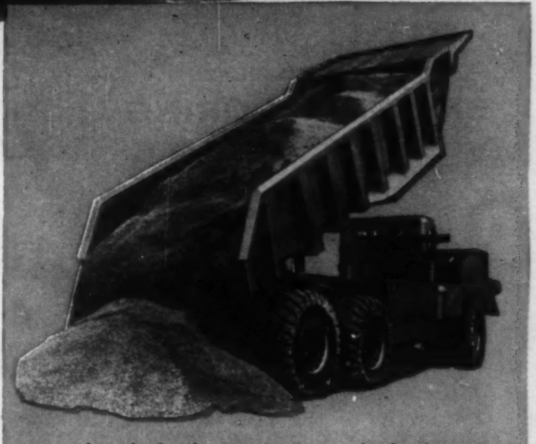

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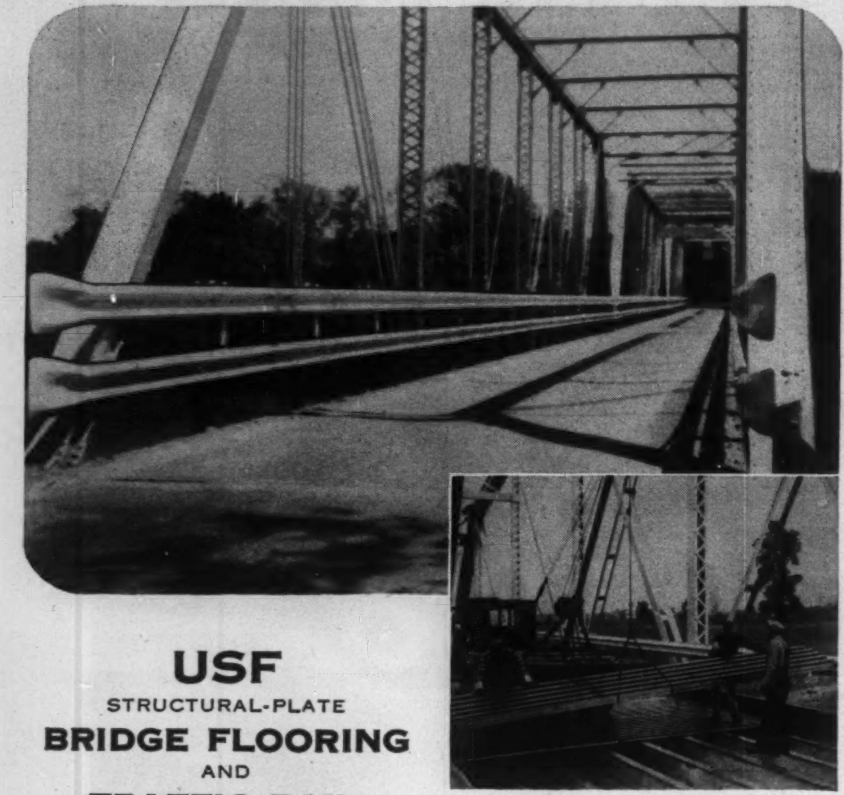

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(Continued from page 116)

25 retail units, about 125,000 sq. ft. store space, on Hy. 8 near Lexington Ave., Anoka Co., LEXINGTON (ST. PAUL P.O.), MINN. Northway Development Corp., 2218 University Ave., St. Paul, Minn.

▲ **Sheehy Constr. Co.,** 1550 W. Larpenteur Ave., St. Paul, Minn. LB **$1,493,337.** general contract 1 story, part second floor Como Park JUNIOR HIGH SCHOOL, Maryland and Dale Sts., ST. PAUL, MINN. Bd. Educ., F. E. Connor, supt., L. E. Kinvig, city purch. agt., 253 City Hall and Court House Bldg., St. Paul, Minn. Bids Jan. 11. CD 12/22.

▲ **Nicholson-Bilhorn, Inc.,** 4 S. Brentwood St., Clayton 5, Mo. Owner Builds. **$1,000,000.** 175 RESIDENCES, SHOPPING CENTER along 1,200 ft. stretch of Manchester Rd. in Ballwin Hills subdivision on Manchester Rd. west of here in St. Louis County, BALLWIN, MO.

Brockmeyer Constr. Co., 634 N. Grand Blvd., St. Louis 3, Mo. LB **$600,540.** combination of 1 and 2 story HIGH SCHOOL and an ELEMENTARY SCHOOL in Troy; addns., alterations to SCHOOLS at Moscow Mills; LB **$526,800** for HIGH and ELEMENTARY SCHOOLS only;

J. E. Williams Constr. Co., 6490 Page Ave., St. Louis 14, Mo. LB **$460,000.** HIGH SCHOOL only, TROY, MO. Bd. Educ., Reorganized School Dist. No. 111, Lincoln Co., Fred Dreyzehner, pres., Troy, Mo. Bids Jan. 12. CD 12/20.

▲ **Rogers Constr. Co.,** 4807 Military Ave., Omaha, Neb. Owner Builds. **$1,000,000.** 125 DWELLINGS, vicinity 72 and Center Sts., OMAHA, NEB.

▲ **Pettigrew, Worley & Reynolds,** 208 W. Avery St., Dallas, Tex. Own Forces. **$1,388,110,** 94 DWELLINGS, ARLINGTON, TEX. CD 12/29.

Joe C. Yarbrough, 503 Hunter Rd., El Paso, Tex. CA **$581,336,** 89 DWELLINGS, EL PASO, TEX. DeWitt & Rearick, 500 N. Kansas St., El Paso, Tex. CD 12/15.

A. J. Monier Co., 1446 N. Flores St., San Antonio, Tex. LB **$582,000,** mechanicals contract for HOSPITAL, LAREDO, TEX. Sisters of Mercy, c/o Mercy Hospital, Laredo, Tex. Bids Jan. 11. CD 12/17/53.

▲ **Whitman Constr. Co.,** 2305 Merle St., Houston, Tex. CA **$1,065,941,** 87 DWELLINGS, PASADENA, TEX. R. G. Whitman, 2305 Merle St., Houston, Tex. CD 1/3.

Wm. D. Parker Lumber Co., Inc., 801 Rosine St., Houston, Tex. Owner Builds. **$992,225.** 90 DWELLINGS; PASADENA, TEX. CD 12/27.

W. W. Walton, Box 810, Tyler, Tex., CA **$694,101.** RECEIVING & TREATMENT BLDG. and RELATED HOSPITAL FACILITIES, TERRELL, TEX. Bd. for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, Tex. Bids Jan. 4. CD 1/12, under LB.

† **Kay-Cee Constr. Co.,** 2647 W. Lawrence Ave., Chicago 25, Ill., CA **$521,000,** KITCHEN, DINING HALL alterations, imprvs., Veterans Admin. Center, WACO, TEX. Veterans Admin., Munitions Bldg., Wash. 25, D. C. Bids Dec. 14. CD 12/22, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
February 9 California

BIDS ASKED—BUILDINGS

▲ **Wash., Opportunity** — SCHOOL — BA 2/3 — Central Valley School Dist. 356, Opportunity, 1 story, 70x145 ft. and 70x265 ft., masonry elementary school. $1,000,000. Plans deposit $50. V. L. Wulff, 1326 W. Riverside Ave., Spokane, archt. CD 3/15.

▲ **Utah, Orem**—HIGH SCHOOL—BA 2/8 or 2/9—Alpine School Dist., American Fork, high school bldg., three major bldgs. $1,500,000. Plans deposit $100. Extended date. William Rowe Smith, 1555 E. 3900 South St., Salt Lake City, archt. CD 12/15.

Wash., Walla Walla—SCHOOL—BA 2/8—School Dist. 110, Walla Walla, 64,000 sq. ft. masonry Garrison Junior High School. $650,000. Plans deposit $50 for general. Extended date. H. B. Gessel, 214 E. Birch St., archt.

SOON LETS CONTRACT—BUILDINGS

▲ **Utah, Salt Lake City**—FASHION CENTER—Samuel Makoff, 60 E. South Temple St., soon lets contract Makoff Fashion Center. $1,000,000. Ashton, Evans & Brazier, 24 S. W. Temple St., archts. CD 5/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WASHINGTON**—State Hy. Comn., Olympia,
U. V. Phillips, 4055 21 Ave. West, Seattle, Wash., LB, **$1,272,900,** First Ave. South Bridge Seattle, King Co. Bids Dec. 18. CD 12/28.

▲† **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho, LB, **$4,797,801,** est. $5,054,025, lengthen runway, Fairchild Air Force Base, Inv. 55-86, SPOKANE, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Jan. 14. CD 12/20.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
Madonna Constr. Co., P. O. Box 910, San Luis Obispo, Calif., LB, **$2,964,679,** grading, paving and 6 bridges 9.3 mi. between Santa Margarita and Atascadero, San Luis Obispo Co. Bids Jan. 12. CD 12/27.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Silberberger Constr., Inc., & J. B. Stringfellow, Box 6, Riverside, Calif. LB, **$386,886,** grading, surf. and welded plate girder bridge 0.8 mi. between Winterhaven and Colorado River, Imperial Co.;

E. L. Yeager Co. & J. A. Payton, Box 87, Riverside, Calif., LB, **$1,143,442,** grading, surf. 1 rein.-con. bridge 11 mi. between Jct. Rt. 78 and San Jacinto, Riverside Co. Bids Jan. 13. CD 12/27.

BUILDINGS

LOW BIDS AND CONTRACTS

Frank Capriotti, 1725 E. Second St., Reno, Nev., LB **$437,640,** RECREATIONAL BLDG., RENO, NEV. Young Men's Christian Assn., 127 N. Center St., Reno, Nev. Bids Jan. 5. CD 1/4.

Brazier Constr. Co., 309 Pontius St., Seattle, Wash., CA, **$613,000** general contract 79,045 sq. ft. 1 story, rein.-con., steel HIGH SCHOOL in East Bremerton, BREMERTON, WASH. School Dist. No. 100-C, 16 and Chester Sts., Bremerton, Wash. Bids Nov. 23. CD 11/30.

Norge Constr. Co., 5008 Admiral Way, Seattle, Wash. CA, **$604,100,** general contract HOSPITAL addns., Rainier State School, BUCKLEY, WASH. State Dpt. P. Institutions, Olympia, Wash. CD 1/12, under LB.

E. R. Haynes, W. 2028 Sinto St., Spokane, Wash., LB, **$533,760,** est. $400,000. rein.-con. COURT HOUSE, COLFAX, WASH. Whitman Co., Court House, Colfax, Wash. Bids Jan. 17.

G. E. Teufel Co., Henry Bldg., Seattle 1, Wash., CA, **$862,563,** general contract 5 rein.-con. Lakewood Junior-Senior High SCHOOL bldgs., 10 Ave. S.W. and S.W. 116 St., SEATTLE, WASH. Highline School District, 401, 253 S. 152 St., Seattle, Wash. Bids Dec. 21. CD 12/28, under LB.

Wagner & Martinez, 181 South Park St., San Francisco, Calif., CA, **$500,000** WAREHOUSE Marion St and Evans Ave., SAN FRANCISCO, CALIF. Grosjian Investment Co., 1875 Marion St., San Francisco, Calif. Awarded Jan. 11.

Herbert Goldsworthy, Box 710, Santa Monica, Calif., CA, **$517,000,** est. $400,000. SCIENCE and HOMEMAKING BLDG., SANTA MONICA, CALIF. Santa Monica Bd. Educ., 1333 6 St., Santa Monica, Calif. Bids Jan. 5, awarded Jan. 10. CD 1/11, under LB.

Smith Campbell, 6510 Cherry Ave., Long Beach, Calif., CA **$670,000** 1 story, frame, stucco HIGH SCHOOL, SOUTH PASDENA, CALIF. South Pasdena School Dist., 1327 Diamond Ave., South Pasadena, Calif. Bids Jan. 7, awarded Jan. 12. CD 1/17, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Que., Montreal**—BUILDING—BA 1/31—Dorchester Tainer Corp., 1390 Sherbrooke St., W., 14 story, steel 505 Dorchester Building (east wing), cor. Dorchester St. W. and Beaver Hall Hill, $4,500,000. R. Fisher, 3177 St. Sulpice Rd., archt.

▲ **Man., Winnipeg**—OFFICE—BA 2/2—Dayton's Ltd., Portage Ave., office bldg., Portage and Hargrave Aves. $2,000,000. Green, Blankstein, Russell & Assocs., 222 Osborne St. N., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Dawson, Wade & Co., Ltd.,** 775 Clark Dr., Vancouver, B. C., CA, **$1,027,227,** 9.14 mi. roadbed from Mile 3.3 to Mile 12.7 of Pacific Great Eastern Ry. Squamish to North Vancouver section, BRITISH COLUMBIA, Pacific Great Eastern Ry. Co., W. A. C. Bennett, pres., 736 Granville St., Vancouver, B. C. Awarded Jan. 12. CD 2/12.

▲ **C. A. Pitts,** 30 Commercial Rd., Leaside, Ont. CA Approx. **$1,790,908.** flood water storage dam on Conestoga River, Glen Allan, BRANTFORD, ONT. Grand River Conservation Comn., J. K. Woodyatt, secy., Brantford, Ont. CD 1/17, under LB.

Serrentino Constr. Co. Ltd., 660 Decarie Blvd., Montreal, Que. CA **$520,000,** filter bldg., VILLE JACQUES CARTIER, QUE. Municipality. J. C. Desjardins, secy., Ville Jacques Cartier, Que. CD 12/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **N. W. Hullah Constr. Ltd.,** 1485 Clyde Ave., West Vancouver, B. C., Owner Builds, **$1,450,000,** 800 "ranch" style HOUSES, KITIMAT, B. C. Awarded Jan. 14.

▲ **Roch Lagace,** 190 Montee St. Charles, Beaconsfield, Que., Owner Builds, **$1,000,000,** HOUSING, incl. 70 units, Orchard Acres, BEACONSFIELD, QUE. CD 1/20.

▲ **Blouin & Blouin Builders Ltd.,** 200 Cartier Blvd., Beloeil, Que. Owner Builds. **$5,200,000.** 400 unit HOUSING DEVELOPMENT, BELOEIL, QUE.

Inland Constr. Co. Ltd., 5950 Cote des Neiges Rd., Montreal, Que. Owner Builds. **$800,000.** HOUSING, 80 units, Levesque Blvd. L'Abord a Plouffe, MONTREAL, QUE. E. Bajold, 6904 Maison St., Montreal, Que., archt.

▲ **Quemont Constr., Inc.,** 285 Bernard Ave. W., Montreal, Que. CA Est. **$6,000,000.** 4 story, bsmnt., brick, Polytechnical SCHOOL, 1430 St. Denis St., MONTREAL, QUE. Montreal Polytechnical School, 1430 St. Denis St., Montreal, Que. G. Gagnier, 1449 Crescent St., Montreal, Que., archt. CD 6/23.

▲ **A. Janin & Co. Ltd.,** 1460 Sherbrooke St. W., Montreal, Que. CA Est. **$3,200,000,** eight 5 story, bsmnt., 111x111 ft., rein.-con., brick APARTMENT BLDGS., Ridgewood Ave. and Cote Des Neiges Rd., MONTREAL, QUE. Owner, c/o contractor. Awarded Jan. 14.

▲ **Bonaventure Investment Co.,** 5950 Cote des Neiges Rd., Montreal, Que., Owner Builds, **$1,720,000** HOUSING DEVELOPMENT, Montgomery Ave., MONTREAL, QUE. David Reich, 1818 Sherbrooke St. W., Montreal, Que., archt.

Broadway Constr., 282 Ontario St. W., Montreal, Que., Owner Builds. **$750,000.** HOUSING near Canadair Plant, Montee St. Laurent, MONTREAL, QUE. CD 1/20.

A. N. Bail Cie Ltd., 1440 St. Catherine St. W., Montreal, Que., CA, **$825,900,** two BARRACK BLOCKS at Canadian Army Camp, ST. JOHN'S, QUE. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Dec. 16. CD 11/24.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho, LB **$4,099,487,** est. $4,945,007, hangar, crash fire station, armament and electronic shop, airmen's dormitory, ready rocket storage bldg., etc. Inv. 55-43, NAKNEK, ALASKA. U. S. Eng., Arcade Bldg. Seattle 1, Wash. Bids Jan. 18. CD 1/4.

BUILDINGS

LOW BIDS AND CONTRACTS

† **S. S. Mullen, Inc.,** 621 9th Ave. N., Seattle, Wash. CA **$815,944,** HIGH SCHOOL and GYMNASIUM addns., Proj. 50-A-45, KODIAK, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids Dec. 17. CD 12/22, under LB.

U. S. POSSESSIONS

† **Hawaiian Dredging Co.,** P. O. Box 3468, Honolulu, T. H. CA **$764,467,** liquid bulk fuel supply lines, ENG-55-54, HICKAM AIR FORCE BASE, T. H. U. S. Eng., P. O. Box 2240, Honolulu, T. H. Bids Dec. 1, awarded Jan. 13. CD 11/9.

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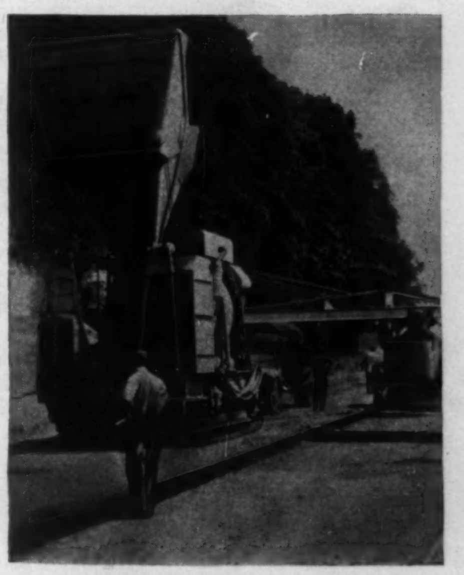

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UNIT PRICES

All Massachusetts Parkway Bids Top Estimate

Eight bids for Revere Beach Parkway in Everett, Mass., on Nov. 2 were all above the $2,539,000 estimate. Massachusetts Department of Public Works awarded the contract for $2,624,000,—5% under second bid.

Roadways are 38 to 53 ft wide on rotaries, ramps and six bridges.

Bidders include:

1C	Gil Wyner Co., Inc., Malden, Mass.	$2,623,674
2	B. Perini & Sons, Inc., Framingham, Mass.	2,764,093
8	Berke-Moore Co., Inc., Boston, Mass.	3,267,932
EE	Dep't Public Works, Boston, Mass.	2,538,939

Bids: 11-2-54 Item	Unit	Quantity	Unit Prices 1 C	2
Exc earth rdway	cy	82,800	$1.05	$0.90
cl "A" rock	cy	100	5.00	3.00
peat	cy	116,000	1.00	0.60
bridge #1, 5 & 7	cy	4,920	4.00	10.00
#2, 8 & 9	cy	7,759	4.00	3.50
trench cl "A"	cy	3,300	2.00	2.10
"B"	cy	1,000	3.70	3.60
channel	cy	9,900	2.15	1.50
cl "B" rock	cy	65	9.00	10.00
CB or MH abandoned	ea	90	25.00	13.00
Rem trees, dia under 24"	ea	13	75.00	20.00
over 24"	ea	3	175.00	35.00
Borrow, ordinary	cy	419,000	1.12	1.40
gravel	cy	58,500	1.60	1.50
sand	cy	30	3.00	6.00
grav for bri fndn	cy	20,400	2.15	2.00
slag	cy	6,635	2.50	2.50
Grade, roll & finish	sy	130,000	0.12	0.15
Base crse cr stone	ton	23,000	2.90	3.30
rdway bitumen	gal	211,000	0.13	0.11
Screened gravel	ton	260	3 50	4.00
Rd dust contro CaC12	lb	10,000	0.05	0.05
bitumen	gal	5,000	0.14	0.11
Surface treat bitumen	gal	1,000	0.14	0.11
Bit conc pvmt cl I	ton	15,000	5.75	6.40
berms cl I	ton	100	13.00	16.00
CC masonry cl A	cy	8,617	46.00	57.00
B	cy	840	46.00	44.00
C	cy	100	65.00	28.00
G	cy	155	17.00	32.00
Steel reinf for structs	lb	876,200	0.11	0.12
Spiral reinf	lb	6,235	1.00	0.80
Structural steel	lb	1,852,700	0.14	0.15
Waterprf, membrane	sy	213	2.00	1.80
prot crse	sy	213	5.00	4.00
Bit damp-proof	sy	3,695	0.60	0.60
Stone post	ea	22	300.00	320.00
Field stone msry-dry	cy	5	12.00	30.00
Slope paving	cy	50	17.00	25.00
Rem superstruct bri #1	ls	1	17,000	6,000
#2	ls	1	4,100	500.00
Met bri rail ty H	lf	2,006	18.00	18.00
St msry walls rem & reb in cmt mortar	cy	5	37.00	50.00
CB	ea	46	230.00	160.00
CB	ea	46	230.00	160.00
w concord fr & grate	ea	11	160.00	160.00
excl cost of cast	ea	72	120.00	130.00
MH	ea	21	225.00	160.00
9-14' depth	ea	1	320.00	270.00
spec san.	ea	6	480.00	550.00
excl cost of cast	ea	17	120.00	130.00
tide gate 18"	ea	1	730.00	650.00
24"	ea	1	1,000	900.00
48"	ea	1	4,000	4,000
MTA	ea	7	500.00	810.00
signal system	ea	1	320.00	620.00
or CB adj to L/G	ea	61	25.00	28.00
change in type	ea	2	60.00	40.00
remodel	ea	7	75.00	50.00
spec fr & cov f&i	ea	7	90.00	100.00
Frame & cov, f & I	ea	2	50.00	50.00
Fr & grate or fr & cov, rem & stack	ea	4	12,00	10.00
Repair well fr & cov	ls	1	750.00	1,000
VCP 12"	lf	160	4.00	4.00
san sewer	lf	220	5.00	4.20
RCP 12"	lf	5,400	4.20	3.20
15"	lf	620	5.00	3.70
18"	lf	530	6.00	5.10
san sewer	lf	160	7.00	6.50
21"	lf	300	7.00	7.00
24"	lf	650	8.50	8.20
36" san sewer	lf	590	19.00	19.00
48"	lf	30	20.00	27.00
42" san sewer	lf	940	30.00	30.00
CIP hvy wgt 10"	lf	100	7.00	5.30
12"	lf	350	7.50	6.40
18"	lf	90	$16.00	$11.00
24"	lf	200	25.00	18.00
48"	lf	190	67.00	70.00
60"	lf	120	115.00	100.00
light wgt 12"	lf	70	8.00	6.00
VCP or CCP 12"*	lf	1,020	3.50	2.50
15"*	lf	290	4.50	3.30
18"*	lf	270	5.50	4.60
Culv P rem & relay 12"	lf	380	3.50	2.80
18"	lf	250	4.00	3.50
stack 36"	lf	110	12.00	2.70
Individual square posts	ea	2	14.00	10.00
Hway guard	lf	2,800	1.80	2.00
steel beam	lf	5,200	3.00	3.50
rem & reset	lf	3,500	1.20	1.[illegible]0
Anchor, end	ea	4	45.00	50.00
intermediate	ea	6	45.00	50.00
bri, assemb	ea	8	30.00	25.00
Fence, ch lnk 60"	lf	2,500	2.60	2.80
rem & reset	lf	1,300	1.20	1.10
stack	lf	450	0.40	0.50
iron pipe	lf	120	8.00	9.00
picket 48"	lf	530	6.50	8.00
barrier	lf	65	9.00	7.00
rem & stack	lf	200	0.40	0.50
CL fence gate rem & reset	ea	1	30.00	20.00
Gran curb straight #2	lf	420	4.20	4.20
#4	lf	11,700	3.60	3.70
curved #4	lf	3,200	5.00	5.10
#5 str 6x9¾"	lf	1,245	5.50	4.60
crv 6x9¾"	lf	46	8.00	7.00
inlets str	ea	50	40.00	33.00
crv	ea	13	55.00	46.00
corners "A"	ea	10	25.00	18.00
Gran face prest conc edge, str	lf	1,100	3.30	3.20
curved	lf	170	4.00	3.80
transitions	ea	26	15.00	11.00
rem & reset	lf	2	1.50	1.00
Curb rem & reset	lf	9,400	1.30	1.00
inlets rem & reset	ea	24	15.00	13.00
corners rem & reset	ea	50	10.00	11.00
rem & stack	lf	300	1.00	0.50
inlets rem & stack	ea	5	10.00	12.00
Sidewk, conc 2-crse	sy	7,500	4.00	3.50
drive	sy	320	5.50	4.00
bit conc surface	ton	300	12.00	11.00
stone dust	ton	80	4.00	5.00
Traffic signal conduit	lf	15,700	1.70	1.20
Bounds, plain gran, f & set	ea	85	22.00	30.00
rem & reset	ea	35	14.00	15.00
Peastone for driveways	ton	10	4.00	5.00
Dem of bldgs (35 items)	ls	1	30,200	11,100
Bar screen 18"	ea	1	15.00	40.00
24"	ea	1	20.00	45.00
48"	ea	1	40.00	50.00
Conduit, 8-duct	lf	1,300	7.00	4.00
9-duct	lf	500	12.00	5.50
MDC police box rem & stk	ea	2	35.00	25.00
sewer replacement	ls	1	79,000	80,000
Flash warning beacons	ea	7	700.00	700.00
Traffic signals pedestrian actuated	ls	1	2,000	2,000
fixed time	ls	1	4,000	3,000
St signs rem & reset	ea	7	15.00	15.00
Portable bldg, office	ea	3	2,500	3,300
san	ea	1	3,800	4,000
Borrow loam	cy	61,000	3.00	3.50
peat	cy	12,600	1.10	1.00
Seeding	sy	92,000	0.10	0.08
CI wat mn 4"	lf	30	4.50	3.50
6"	lf	450	5.00	4.00
8"	lf	250	6.50	5.00
10"	lf	30	7.50	9.00
12"	lf	180	12.00	10.00
14"	lf	270	12.00	9.50
20"	lf	1,970	24.00	26.50
16" rem & relay	lf	510	9.00	8.00
Hydrant, rem & reset	ea	8	170.00	125.00
stack	ea	3	60.00	50.00
Copper tube ty K ¾"	lf	160	2.50	2.50
1"	lf	160	3.00	2.50
Gate valve 8"	ea	1	105.00	110.00
16"	ea	1	425.00	500.00
20"	ea	1	1,000	1,100
Gate box	ea	30	25.00	22.00
rem & reset	ea	10	20.00	7.00
adjust	ea	25	7.00	4.00
Gate rem & reset 6"	ea	6	30.00	150.00
14"	ea	3	75.00	200.00
16"	ea	1	100.00	250.00
20"	ea	1	160.00	250.00
stack 4"	ea	1	12.00	30.00
6"	ea	2	20.00	30.00
10"	ea	6	30.00	50.00
Service box	ea	15	25.00	10.00
Meter box, rem & stack	ea	2	20.00	10.00
Curb stops	ea	15	20.00	16.00
Corp cock, coppr neck ¾"	ea	1	25.00	12.00
1"	ea	1	30.00	12.00
Tap sleeve ram & stack	ea	1	15.00	55.00
Insul for 6" water pipe	lf	150	7.00	9.00
14 ga cable 10-conductr	lf	4,600	0.70	0.75
30-conductr	lf	1,000	1.70	1.75
Pole base	ea	92	35.00	17.50
Hand hole	ea	25	60.00	66.00
Elec MH	ea	2	200.00	250.00
St light rem & stack	ea	18	50.00	15.00

*Bidders chose cement concrete pipe.

Mortgage Lenders Warn Home Builders on Over Optimism

Pushing up home starts to 1.5 million this year would tighten mortgages sharply, life insurance executive says

During its annual meeting last week in Chicago (see page 25), the National Association of Home Builders got some warnings from mortgage lenders.

George Conklin, an economist for the Guardian Life Insurance Co., said that if housing starts this year run much above last year's level of 1,215,000, say to 1,500,000, homebuilders would run into a very tight mortgage market. NAHB's objective is 1,400,000 annually.

Conklin pointed out that credit conditions had changed a good deal in the past year. Business activity is increasing now rather than declining. Inventories are being built up instead of being cut down. He noted that the Federal Reserve Board already has taken steps to tighten credit slightly (ENR Jan. 13, p. 79).

• **FRB may act**—The insurance executive also predicted that if it looked as if home starts were going to rise to the 1,500,000, the Federal Reserve and the Treasury would act to tighten the mortgage market. Said he: "The government doesn't want an all-out boom now and then a decline in 1956 just before the elections. You can be sure they will act promptly."

Conklin pointed out that a good deal of the long-term money loaned last year by life insurance companies and savings banks came indirectly from commercial banks, which bought about $2.5 billion of government bonds from the other two types of lenders. The commercial banks bought governments because their regular commercial-loan business was declining; the insurance companies and savings banks sold governments because they needed extra funds to make mortgage loans. If bank loans increase this year, that indirect source of mortgage money would be at least partly shut off.

• **Government price control?**—A Savings & Loan man, Ralph R. Crosby of Providence, R. I., warned the homebuilders that the growing use of government-underwritten mortgage credit and the decline of the conventional mortgage may contain "seeds of destruction," opening the way for direct controls over sales, prices and profits of homebuilders. Savings & Loan associations generally lend on conventional home mortgages, rather than FHA or VA mortgages.

Crosby said that in 1953, 61% of new homebuilding was financed by conventionals and that in 1954 this ratio dropped to 53%. He expected it would be even lower in 1955 as the effects of the more liberal provisions contained in the Housing Act of 1954 make themselves felt.

Said Crosby: "So far as we can see, putting the home mortgage business and the homebuilding industry so much in hock to Uncle Sam hardly seems to be smart business." He also predicted that the provisions of the 1954 act, by making mortgage credit easy to find, might push up home costs and home prices. And, like Conklin, he warned that the government would start tightening mortgage credit if the building boom became inflationary.

Big New Market

Carrier figures $28-billion market in existing homes

Residential air conditioning is fast developing a big market out of existing homes, rather than new housing units. That's the trend predicted by Cloud Wampler, president of Carrier Corp. He figures there is a potential air conditioning market of about $28 billion in existing homes. Wampler says that his company expects that this year it will sell more conditioners for existing homes than for new ones. He foresees a wave of rehabilitation and modernization featuring air conditioning in older homes, spurred by the rate of construction of new air-conditioned houses.

The Carrier president says that his company has developed new equipment which can be installed in existing homes that up till now have been considered too difficult or too expensive to air-condition.

Wampler claims that the new Carrier equipment will provide economical summer air conditioning for the nearly two out of three homes now served by hot-water or steam heat, floor furnaces or space heaters. He points out that about 22,000,000 homes in this category use "wet heat" or have no central heat at all, and thus lack a central duct system. He figures that this could open up a $14-billion market.

The new Carrier "Summer Weathermaker" consists of a unit not much larger than a room air conditioner, installed with minimum ductwork inside the home and connected to an air-cooled condenser using no water located outside the house.

Wampler also figures the potential air-conditioning market in existing homes with warm-air heat at about $14 billion. Of these, he estimates there are about 6,500,000 dwellings with forced warm-air systems, including around 5,000,000 that can be converted and 1,500,000 that will need replacement. The total market here is about $8 billion. In addition, there are about 7,000,000 homes with gravity heat. The total market in these homes is about $6 billion.

Carrier has developed a way of estimating the average seasonal cooling cost for central air-conditioning in any home in the U.S. It claims this method is accurate within a few dollars, thus making it possible for potential customers to know in advance how much the operating costs will be. Operating cost can be obtained from simple tables as soon as average cooling capacity requirements have been determined. Wampler says that in many parts of the country "the cooling bill will be substantially less than for heating."

BLS Issues New Roundup of Construction Cost Indexes

The Bureau of Labor Statistics has just issued a new roundup of construction cost indexes (BLS Report No. 73).

Using a 1947-1949 base throughout, BLS tabulates four government price and wage series, two government cost indexes, and six of the private indexes reported in ENR's annual construction cost issue.

Annual index values are shown from 1915 through 1953. Monthly values are shown, starting with January 1949 and continuing up to July 1954. The report includes definitions of each series, along with a conversion factor for converting each index from its original base to the 1947-1949 base.

(*B&F continued on page 124*)

Where's Money?

Westchester wonders how to finance parkway work

The long-awaited engineering report on Westchester County's parkways (ENR Jan. 13, p. 81) was finally published last week. It recommends that the county—or some public agency—spend about $55 million at once to modernize its major passenger-car corridor between New York City and New England. Another $5.6 million should be spent later.

The plan presented by Edwards, Kelcey & Beck, of Newark, calls for widening the 15-mi Hutchinson River Parkway, from its present four lanes to six, with room to build two more lanes later. The Cross-County Parkway, which leads New England traffic another five miles from the Hutchinson toward the George Washington Bridge and New York's west side, would become a modern four-lane, divided highway, with room for two more lanes later. And the southern two miles of the Saw Mill River Parkway, which leads upstate New York and New England traffic to the New York City line, would be widened from six lanes to eight lanes, and another two later.

• Who will pay?—There is no question that Westchester needs a modern superhighway to connect with Connecticut's Merritt Parkway and with the projected Connecticut expressway. The existing parkways are universally considered to be years out of date. The question is: Who is going to pay for the modernization job?

A traffic estimate by Coverdale & Colpitts indicates that toll collections won't be much higher in the next few years. That's because of competition from the New York State Thruway and other projected state parkways, including the New England Thruway.

So county executive James D. Hopkins is hoping to get the route declared part of the interstate highway system and has asked the county's two congressmen to look into the matter. Says Hopkins: "Certainly our county is entitled to the same treatment afforded other places for highways of a national character."

Anaconda to Build Aluminum Mill at Terre Haute, Ind.

Anaconda Copper Mining Co., which entered the aluminum field in 1953 when it started building a reduction plant at Columbia Falls, Mont., is planning to proceed with construction of a $25-million aluminum mill, which will use the production of the Montana plant.

The plant will be built at Terre Haute, Ind., by Anaconda's subsidiary, American Brass Co., of Waterbury, Conn. Construction of the 500,000-sq. ft. mill is to start as soon as design is completed. It will turn out ingots, billets, sheet, strip, and extruded aluminum tubes, rods, and special shapes. For some years, American Brass has already been producing some sheet and strip aluminum at a Torrington (Conn.) mill.

Aluminum Production Breaks Records as Capacity Expands

The U. S. aluminum industry is continuing to set new production records for primary aluminum as new capacity comes into operation, according to the Aluminum Assn. The industry has just reached annual, quarterly, and monthly highs for tonnage.

For 1954, production was 16.7% above the 1953 total of 2.5 billion lb. Production in December was almost 2 million lb. over the previous record set in July. And the total for the last quarter was about 3.2 million lb. over the third quarter, which was itself a record-breaker.

Scheduled Gas Tax Cut Ruled Out in California

California legislators have decided to continue the state gas tax at 6 cents at least until 1960. The rate was scheduled to drop ½-cent on June 30. Back in 1953, a portion of the gas tax —1½ cents—was established as an emergency measure. The emergency rate was to be reduced to 1-cent June 30.

A new system for allocating gas-tax revenue also was expected to be part of the bill. Southern California legislators want the revenues distributed on the basis of auto registration rather than the present method of 45% to the north and 55% to the south. But this group agreed to submit that issue in a separate bill.

New York Telephone Plans Record Expansion in 1955

The tremendous postwar construction program of telephone facilities in the U. S. is continuing strong in 1955. The biggest of the Bell system subsidiaries, New York Telephone Co., is planning a record outlay this year.

New York Telephone will spend $200 million, as compared with $182 million last year, and with the previous record of $194 million in 1952.

State Headaches

Legislatures think over ways to finance building

Along with inadequate highways, most states are faced with the problem of inadequate public buildings and not enough schools. This week, several state legislatures were considering big plans:

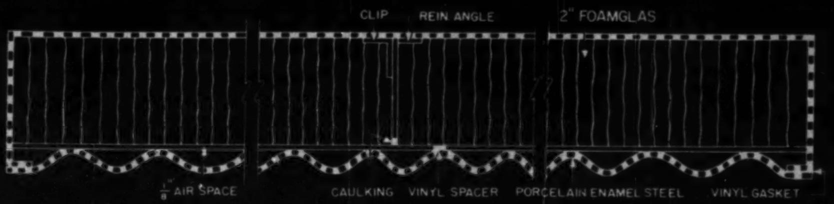
- In California, Gov. Knight was recommending a $200-million bond issue to help finance a five-year construction program at state colleges, mental hospitals, prisons, and other institutions. And a state senator had proposed that the legislature submit another $100-million bond issue to the voters to help local school districts with building programs. Voters OK'ed a $100-million bond issue of this kind last November, and previously have approved school bond issues totaling $435 million.
- In Oregon, the legislature was mulling over a proposed constitutional amendment to authorize a bond issue up to 1% of the state's assessed valuation to finance a long-range institutional building program. At present values, that would allow up to $19 million in bonds.
- In South Carolina, a state senator has introduced a bill to boost from $100 million to $125 million the amount of state bonds that may be outstanding at one time. These bonds are used for local school aid. The maximum already has been boosted from $75 million to $100 million.
- In Indiana, the legislature is thinking over a proposal to appropriate $5 million from current funds to start construction of a projected $15-million state office building in Indianapolis. The remaining $10 million would be appropriated later.

Rate on U.S. College Housing Loans Will Continue at 3¼%

Albert Cole, Housing & Home Finance Administrator, has announced that the interest rate on college housing loans will be 3¼% for the current six-month period from Jan. 1 to June 30. This continues the rate obtaining for the previous six months.

Under HHFA rules, colleges must continue to accept bids for housing bonds from private lenders at 3½% or less. John C. Hazeltine, Commissioner of the new Community Facilities Administration, which runs the college housing program, says that over $70 million in loans or reserva-

(*Continued on page 126*)

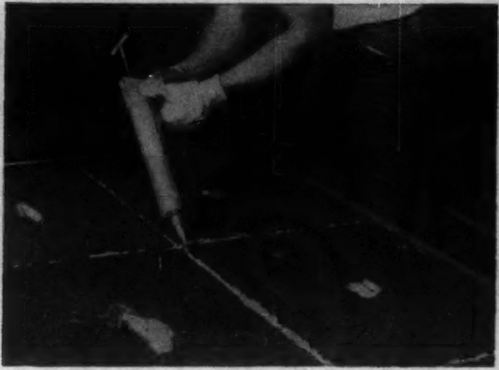


Architect: Vincent G. Kling, A. I. A., Philadelphia, Pa. • *Consultant:* I. M. Pei, New York, N. Y. *General Contractor:* Turner Construction Co., New York, N. Y. • *Panel Manufacturer:* Ingram-Richardson Mfg. Co., Beaver Falls, Pa. • *Roofer:* Wm. C. Kulzer Co., Philadelphia, Pa.

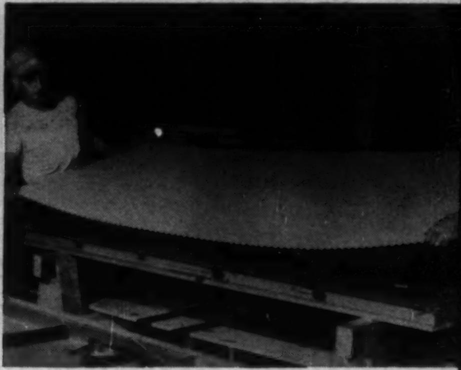
Unique porcelain enamel-cellular glass sandwich developed for RCA's Cherry Hill curtain walls

The architect, members of his staff and RCA's representative check progress at the job site during erection of the five Cherry Hill buildings. The owner and the architect report: "We overcame design problems plaguing grid-panel pioneers by insulating the porcelain enamel panels with 2" FOAMGLAS.

"We avoided any moisture problem by providing a 1/8" air space between the insulation and the outer porcelain enamel skin (detail above).



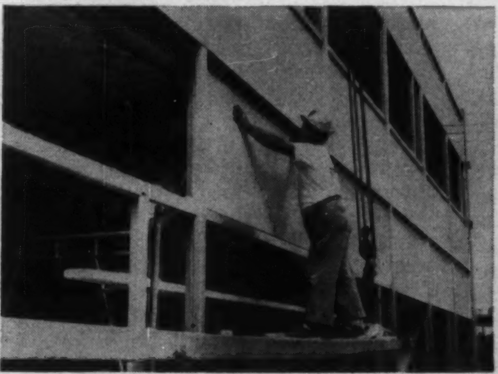
"Moisture can accumulate only in the air space and runs down moisture-proof FOAMGLAS to a weep strip. Caulking seals joints.



"High rigidity of FOAMGLAS and vertical corrugations of outer skin prevent 'oil-canning' or dimpling.

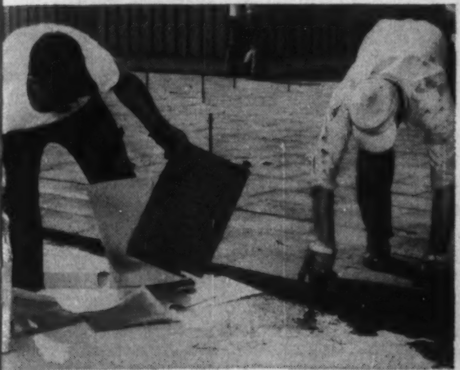
"Completed 94" x 34" PORCELPANELS* weighing just 6½ lbs. per sq. ft. were easily lifted into place.

* ® Ingram-Richardson Mfg. Co.



"Our unique panels combine ultra-modern appearance and high insulating efficiency (U factor 0.15)... cost just $4.50 per sq. ft. erected in place.

"Lift slab method cut construction time and costs. Roofing materials were raised right on the top slab.



"We also insulated most roofs with FOAMGLAS. Its high strength permits heavy foot traffic, minimizing need for catwalks.

"FOAMGLAS gives our Cherry Hill buildings added protection, too, because it's fireproof."

Use coupon today for a copy of our brand new booklet on latest curtain wall designs which utilize . . .

FOAMGLAS®

the cellular, stay-dry insulation

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Corporation
Dept. K-15, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

☐ Please send me the brand new booklet on FOAMGLAS insulation for prefabricated curtain wall panels and other dry wall construction.

☐ Send engineer to discuss a special insulating problem.

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Company____________________Title__________

Address______________________________

City______________Zone______State__________

(Advertisement)

VIBER VIBRATOR selected for concrete compaction in crucial area to produce maximum density at the point where concrete stress is critical.

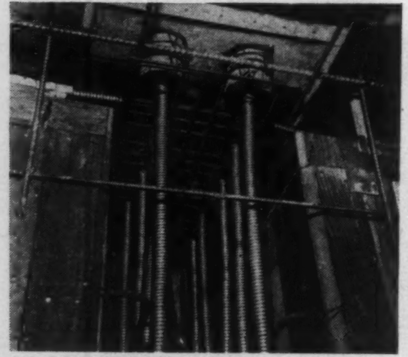
Vibration essential in crucial area around prestressing cones

THE RICHFIELD OIL BUILDING ANNEX in Los Angeles is the largest monolithic prestressed concrete office building in the United States today. According to Albert C. Martin and Associates, architects and engineers on this project, prestressed construction was adopted because of design problems resulting from the matching of 10 foot 3 inch floor to floor heights in the existing building. With 8 feet the minimum clearance height, prestressing not only made possible the matching of the high velocity air conditioning ducts, and at the same time installation of recessed lighting, but allowed a 46 foot clear span for flexibility in partitioning of office space. Because of the lack of room for erection equipment the new structure was cast in place.

• **Concentration of load** on the cable anchorage by stressed cables makes the area around the cones the most crucial area. Because patching of concrete in this area of cast-in-place prestressed concrete could scarcely be tolerated, consolidation of the concrete in this area is particularly important.

• **Guy F. Atkinson Company,** contractor, used Viber 1-5/16 and 1-3/4 inch diameter vibrators. Model E electric motor driven vibrator 1-3/4 inch diameter was used at the base of cone, or where spacing would allow, the 1-5/16 inch diameter Model 26 was used between cones as well as at the base of cone.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 67, 726 South Flower Street, Burbank, California.



THE CONGESTION of prestressing cables and cones at the point of maximum load requires top performance from vibration equipment.

VIBER

CONCRETE VIBRATORS SINCE 1931

tions of funds have now been withdrawn in favor of some type of private financing.

The agency is pleased about this, as it naturally wants to get private lenders into this field as much as possible. Says Hazeltine: "We are happy that we have been able to be of assistance in developing these projects to a point where private investors have found them attractive."

Market Marks Time

Wall Street is waiting to see what happens next

Ever since Administration plans for modernizing the interstate highway system began to take solid form in the past few weeks, there has been a noticeable absence of news about new toll-road financings. It's quite possible that backers of such projects will want to wait and see what Congress will do about giving credit to states where new toll-road projects are financed.

• **Florida pike**—However, this week one of the pending projects was in the headlines again. The Florida Turnpike Authority has named Feb. 28 as the tentative date for sale of a $74-million revenue issue to finance the proposed 103-mi turnpike between Hollywood and Ft. Pierce.

No other turnpike issues are definitely scheduled. As a matter of fact, there are no really large municipal-bond issues of any type scheduled for the immediate future. Wall Street underwriters are waiting to see whether the Treasury will offer a long-term bond when it refunds over $12 billion in securities that will mature in February and March. The announcement is expected soon.

• **Uncertainty**—Meanwhile, the possibility of a long-term bond has been helping to depress bond prices and thus push interest rates up a little. A long-term Treasury bond would compete with other long-term securities, such as revenue bonds issued for turnpikes, corporate bonds, and home mortgages. It would make turnpikes more expensive to finance, and home mortgage money harder to find.

For nearly two years, the Administration has been careful not to get in the way of other long-term borrowers. It wanted to encourage business activity. Now, with business activity rising, the Treasury might step into the long-term bond market.

That's what worries municipal-bond underwriters this week. They don't want to be taking on large volumes of new revenue bonds and corporate issues until the Treasury's refunding terms are known. For if any substantial portion of the maturing government securities could be refunded into new long-term governments, prices of long-term bonds now on the market might well decline further.

Business Briefs . . .

- **Allied Stores Corp.** plans to build seven more regional shopping centers during the next three years, at a cost of about $238 million. The retail chain has three centers in operation at the present time.

- **Southern California Edison Co.**, of Los Angeles plans to spend about $76 million for its construction program this year.

- **Continental Copper acquires Woolridge**—Continental Copper & Steel Industries, Inc., of New York, has acquired Woolridge Mfg. Co., of Sunnyvale, Calif., maker of heavy-duty earth movers.

- **British Columbia Electric Co.** has set up a record construction budget of $38 million for this year, mostly for electrical facilities. If the Federal Power Commission OK's sale of natural gas to the U. S. from British Columbia's Peace River fields (ENR Dec. 23, 1954, p. 19), the company will launch a $12-million to $15-million expansion program in connection with distribution of gas to lower British Columbia.

- **Home mortgage debt** gained almost 14% in 1954, and now totals over $75 billion, according to preliminary estimates collected by the Wall Street Journal.

- **Gar Wood Industries, Inc.**, maker of earth-moving and truck equipment, reports sales of $30.5 million during the fiscal year ended Oct. 31, compared with sales of $50.4 million in the previous year. The company had a net loss of about $825,000 compared with net earnings of $404,000 in the previous fiscal year. President E. F. Fisher expects that sales this year will be better than in 1954, in spite of "the continued decrease in military procurement."

- **New plant for metal building materials**—H. H. Robertson Co., of Pittsburgh, is planning a new plant in the Baltimore area, near Bethlehem Steel Co.'s Sparrows Point plant.

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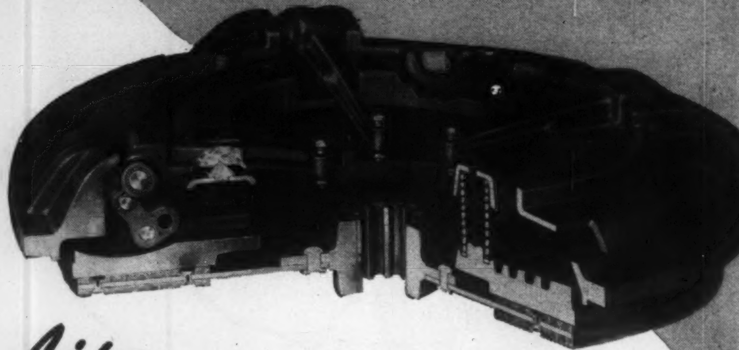

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The pressure plate and friction element are always parallel. Non-adjustable, serviced without special tools.

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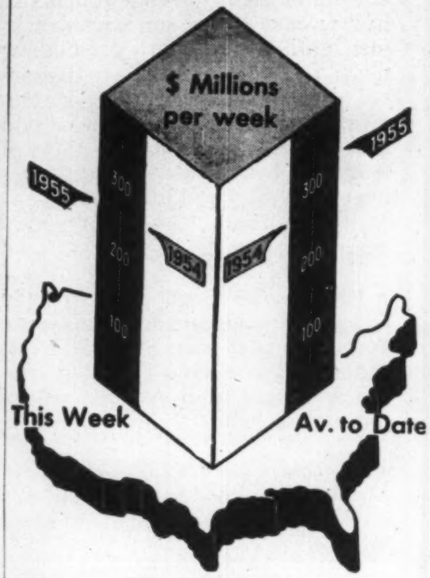
Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 4 wks 1955	Cumulative 4 wks 1954	% chge
Federal	$27.4	$163.2	$81.0	+101
State and municipal ...	70.7	325.8	334.9	—3
Total public....	98.1	489.0	415.9	+18
Total private....	160.4	806.3	350.4	+130
U. S. total.....	$258.5	$1,295.3	$766.3	+69

Contracts by type of work

	This Week	Cumulative 4 wks 1955	Cumulative 4 wks 1954	% chge
Waterworks	$5.8	$28.9	$15.1	+91
Sewerage	2.8	22.3	20.6	+8
Bridges	6.1	36.5	27.7	+31
Highways	22.6	118.7	105.1	+13
Earthwork, waterways ...	19.2	34.8	27.8	+25
Buildings:				
Public, excl. hsg.	19.7	161.3	128.9	+25
Housg., public.	1.9	4.1	20.7	—80
Housg., private	99.2	442.4	174.6	+153
Commercial .	25.6	96.6	79.6	+21
Industrial ...	18.6	228.5	84.3	+171
Unclassified	37.0	121.2	81.9	+48
Total	$258.5	$1,295.3	$766.3	+69

NOTE: Minimum size proejcts included are (effective Jan. 1, '55), Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344.000.

New capital for construction

(millions of dollars)

	Week of Jan. 20 1955	Cumulative 3 wks 1955	Cumulative 3 wks % chge '54-'55
Corporate securities......	$105.9	$145.8	+28
State and municipal:			
All except housing.....	81.4	140.8	+5
Housing	...	10.6	+3
Federal loans	1.8	8.0	+21
Federal aid	...	...	...
Total non-federal	189.1	305.1	+15
Federal appropriations:			
In U. S..............	...	...	...
Outside U. S.........	...	...	...
Total new capital........	$189.1	$305.1	+15

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost ...	1/20	645.57	310.13	135.25
	12/30/54*	644.32	309.72	135.07
Building cost	1/20	459.16	247.99	130.41
	12/30/54*	457.91	247.53	130.17
Volume	Dec.	464	189	134
	Nov.	522	212	151

* Official ENR index for Jan. 1.

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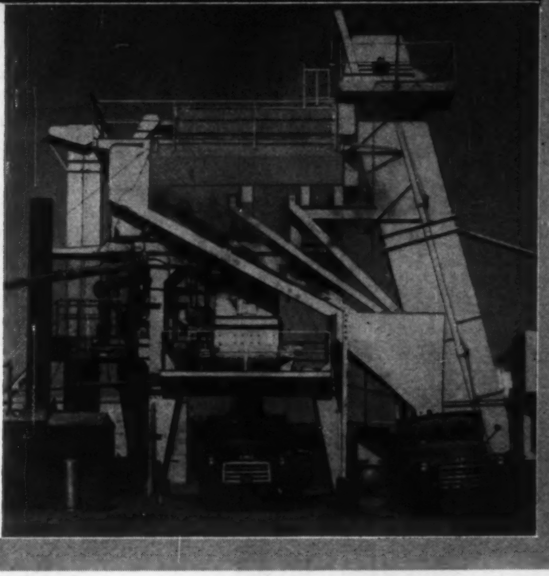
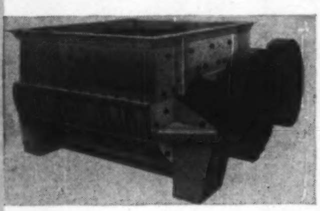
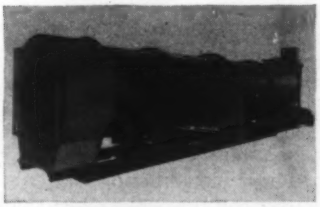


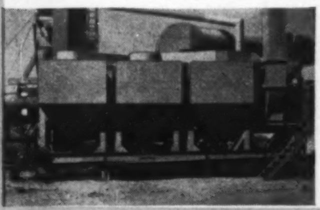
*** In an asphalt plant "BETTER" means the ability to produce *greater tonnage,* with a minimum amount of maintenance, day-in and day-out regardless of the bituminous mix specifications.**



● The MADSEN Model 440 Twin-Shaft Pug Mill Mixer is available in 4000-lb., 5000-lb. and 6000-lb. capacities. The body of the mill is fabricated steel, press-broke, formed and jig-welded. The curved precision-ground liner segments are externally installed and removed.

● MADSEN Dryers feature a unique cold end cowl design with externally replaceable bottom liners. Interior spiral flights and lifters provide efficient pattern for heating at minimum fuel cost. Sizes range from 32 to 84 inches in diameter and from 10 to 40 feet long.





● MADSEN "On-The-Square" Dust Collector Units combine cyclonic and labyrinth concentration principles of dust collection. All-welded design reduces intrusion of air into the system to a minimum. Built in one, two and three cyclone units.

● The ability of an asphalt mixing plant to produce top tonnage and to make money on every job for its owner, depends on how well the component parts of the plant perform their individual functions. In the MADSEN Model 481 you will find a combination of smooth, efficient working units that give you the ultimate in superior overall plant performance and top tonnage!

The MADSEN Model 440 Twin-Shaft Pug Mill Mixer, used in the Model 481, leads the field in mixing ability, low-cost maintenance and long life. This outstanding mixer combined with the MADSEN patented asphalt pressure injection system provides a discharge time of approximately 4 seconds regardless of batch size.

The MADSEN patented "On-The-Square" Dust Collector Unit is recognized throughout the industry for its high dust collecting efficiency. And, MADSEN Counter-Flow Aggregate Dryers combined with MADSEN Dust Collectors offer an outstanding drying combination for paving plant operations.

The component parts of MADSEN Asphalt Plants are engineered, built and assembled in the modern MADSEN factory. They are designed for fast set-up and take-down, high production and low operating cost. When buying an asphalt plant check the performance of the individual units and you will have a good idea of what the overall plant will do. Check MADSEN Asphalt Plants this way and you will buy MADSEN!

The MADSEN Model 481 Batch Capacity Asphalt Plant (shown above) is recognized as the outstanding batch capacity plant in the industry. Write for your copy of Catalog No. 800.

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LABOR

Corruption Charges

Congressional committee includes building trades in racketeering report

Congressional disclosures of corruption and violence by AFL construction unions in Ohio and the nation's capital have opened the gates to what may be a major federal crackdown on union abuses.

Last week, the Justice Department pushed prosecution of officials of the AFL painters union in the District of Columbia as the first follow-up of charges leveled by a special House anti-racketeering subcommittee. New investigations of labor corruption were also urged on the 84th Congress as the next step on Capitol Hill.

The two-fold attack grew out of a report of findings by the special House committee during recent hearings led by Ohio's newly elected Sen. George Bender, now a member of the Senate Labor Committee.

The probers sent their findings to the Justice Department with the warning that "new acts of violence" are likely unless it takes quick action. They also cautioned that current laws such as Taft-Hartley, the Hobbs Anti-Racketeering Act and the Internal Revenue Act need strengthening to prevent further illegal practices.

The subcommittee pinpointed these charges:

- Youngstown, Ohio, Local 207 of the AFL Iron Workers Union was involved in a situation that permitted "beatings, bombings and other acts of violence" during construction activities throughout the area. The violence centered in a dispute between the AFL local and UMW's District 50.
- Cleveland Local 18 of the Hoisting and Operating Engineers Union and other union groups were associated with a series of 33 bombings, destruction of construction equipment and other illegal practices on excavation projects in the Cleveland area.
- AFL Painters Union in the District of Columbia had indulged in extortion and bribery of contractors, income tax violations and other illegal practices.

The charges were directed at local officers of the union. "It would appear conclusive," the report said, "that racketeers who are permitted to operate under the guise of being honest labor leaders must be eliminated in order to permit labor and rank-and-file workers to earn a just and fair living and to enjoy the fruits of their labor in peaceful surroundings." The committee also noted that small businessmen were victims of the practices.

So far, the report says, the lawless operations have gone unchecked. Besides seeking Justice Department prosecution, the probers sent their findings to United States attorneys in Ohio and to Labor Secretary James P. Mitchell.

In its first move, Justice Department attorneys took accused officers of District Painters Union Council No. 51—Robert C. Lowry and John E. Sullivan—into District Court in Washington, D. C., on charges of extortion. The two men were accused of extorting funds from contractors to insure good work on painting projects.

The report indicated that, in many instances, the unions controlled contractors, either by demanding bribes for supplying labor or by inflicting violence on contractors who refused to join union-led associations. In some cases, the report showed that the unions took over entire operations and made businessmen do their bidding.

Employment in December Continued Downward Trend

The downward trend in contract construction employment, which began in October (ENR Nov. 18, 1954, p. 160), continued through 1954, although construction put in place was setting new highs.

December was the third consecutive month in which employment on contract construction fell below the year-ago level. The preliminary BLS estimate of 2,550,000 construction workers was 3.1% below December 1953 and was the lowest December figure since 1950.

For the year, 1954 contract construction averages out at 2,626,000. Because of relatively high employment earlier in the year, this was less than 1% below the 1953 high and slightly lower than in 1952.

Sharpest drops were in the southern states and California, according to available figures for October. That month, California was down 12%, Louisiana 22%, Mississippi 19%, and South Carolina 17%.

Strongest runners against the October general trend were Tennessee, up 12% and Rhode Island, up 11%. States in the West, Middle West and New England were generally firm, al-

(*Continued on page 133*)

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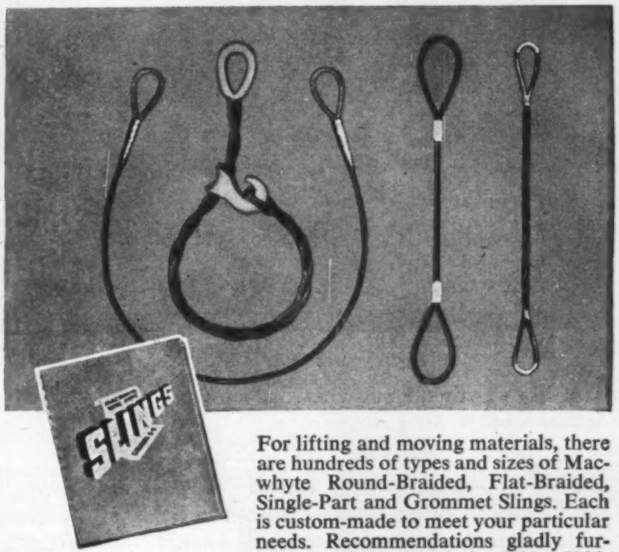

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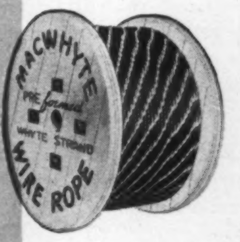

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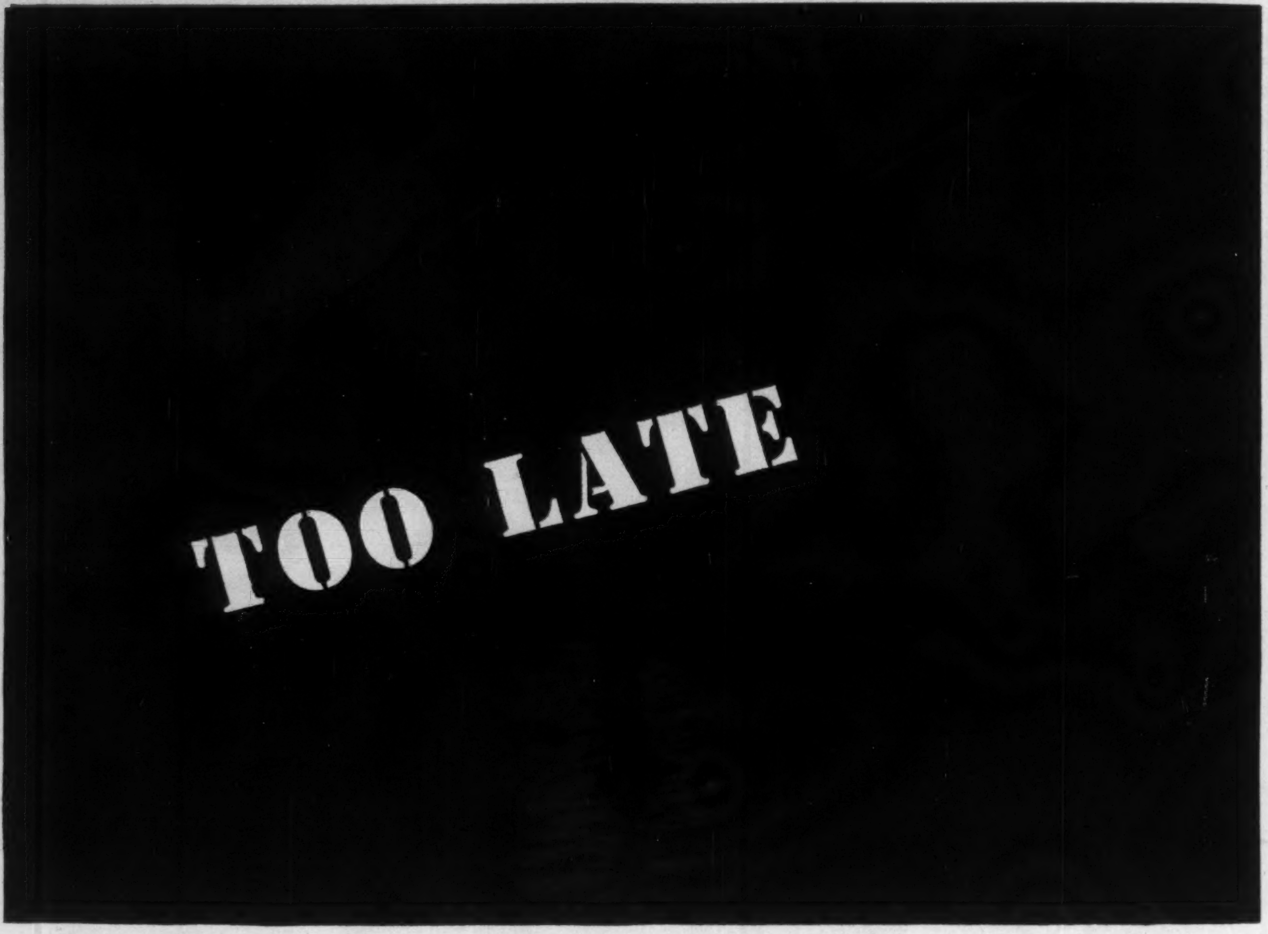

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though Oregon was down 7% and Massachusetts 6%. New York was down 5%, and Pennsylvania and Maryland were off 4%.

Area-Bargaining Upheld As Dispute in N.Y. Ends

A settlement has been reached in the dispute between the Adirondack and Vicinity District Council of Carpenters and the Northern New York Building Trades Employers Association (ENR Nov. 25, 1954, p. 50). The dispute had directly challenged the sanctity and validity of area-bargaining agreements.

Highlight of the settlement, achieved during adjournment of arbitration proceedings, is recognition and acceptance of multi-employer bargaining. Under the new agreement, all members of the council will be bound by terms of agreements between the council and BTEA, and the council agrees not to sign up with non-members of BTEA on terms that would be more favorable than those contained in its contracts made with the association.

The new agreement also extends the existing contract to June 30, 1956 and increases building construction rates 7½ cents, effective June 30 of this year.

Labor Briefs . . .

• **Modular measure**—The Bricklayers, Masons and Plasterers International Union is the first building trades union to endorse the principle of modular measure. Commended for its action by a number of organizations, including AGC, the union says it will continue to educate its members in the significance of the principle.

• **Racketeering**—Guy Harmon, business agent of an AFL operating engineers local in Peoria, Ill., has been sentenced to four years in prison and fined $10,000 for labor racketeering. He was convicted of extorting $1,750 from a contractor on an interstate pipeline project.

• **Secondary boycott**—An NLRB trial examiner in Cleveland has charged the Carpenters District Council and its Local 11 with boycotting ready-made doors for use in a Rocky River new homes project. This action has resulted in the issuance of a "cease and desist" order. The doors were supplied by General Millwork Corp. and Haskelite Mfg. Corp., both of Grand Rapids, Mich.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: February 10, 1955

Contract No. G-3

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

STRINGER SPANS SUBSTRUCTURE FROM NEWTON CREEK TO NORTH-SOUTH FREEWAY OF THE BRIDGE OVER THE DELAWARE RIVER CONNECTING PACKER AVENUE, PHILADELPHIA, PENNSYLVANIA, AND GLOUCESTER, NEW JERSEY

Sealed bids will be received for Stringer spans substructure from Newton Creek to North-South Freeway of the bridge over the Delaware River connecting Packer Avenue, Philadelphia, Pennsylvania and Gloucester, New Jersey, known as Contract G-3, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P. M., (Eastern Standard Time), February 10, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $100,000.00 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

Bids: March 1, 1955

Contract LT-160.033

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL—THIRD TUBE
ALTERATIONS AND DEMOLITION—
FREIGHT SHED AND PIER 78

Sealed proposals for the alterations to the freight shed, construction of temporary and permanent cattle unloading facilities and demolition of Pier 78 at the foot of West Thirty-Eighth Street, New York, N. Y., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, March 1, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid wil receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, January 27, 1955

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4335) will be received at Cody, Wyoming, until February 24, 1955, for furnishing labor and materials for 34.5-kv additions to Lovell Substation, Transmission Division, Wyoming, Missouri River Basin Project. Location: Lovell, Wyoming. Principal items are 470 cu. yds. of excavation; 50 cu. yds. of concrete; 25,000 lbs. furnishing and erecting structural steel; installing Government-furnished autotransformer, 2 circuit breakers, 2,700 ft. of cable, 4 transformers; modifications to main control board; and other work. Completion time 340 days. For particulars, address Bureau of Reclamation, Supervising Engineer, Cody, Wyoming; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4326), will be received at Loveland, Colorado, until February 17, 1955, for furnishing labor and materials for earthwork and structures for South Platte Supply Canal, South Platte Section, station 1727+00 to station 1795+00, Colorado-Big Thompson Project, Colorado. Location near Fort Lupton, Colorado. Principal items are 32,600 cu. yds. excavation; 2,800 cu. yds. construction of compacted earth lining for canal; 3,730 cu. yds. backfill about structures; 225 cu. yds. concrete in structures; furnishing and laying 520 lin. ft. of 42-inch and 54-inch HC50 concrete pipe; furnishing and installing 2,790 pounds of metal pipe flumes; and other work. Completion time 130 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4338), will be received at the office of the Bureau of Reclamation, Kennewick, Washington, until February 24, 1955, for furnishing labor and materials for completion of Chandler Power and Pumping Plants and Appurtenant Works. Location: Prosser, Washington, Benton county. Principal items are: installing nonembedded parts and testing two 8,500-hp and two 6,200-hp turbines, lump sum; installing and testing two 167-cfs main pumps, lump sum; installing accessory hydraulic equipment, 33,000 pounds; furnishing and installing metalwork for cable trays and supports, cable tunnel, sump-pump platform, and steel structures, and miscellaneous metalwork, 30,000 pounds; installing power transformer, generator-voltage bus duct and switchgear, and other electrical equipment, lump sum; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, Regional Office, Boise, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

(Continued on following page)

OFFICIAL PROPOSALS
(Continued from preceding page)

Bids: March 1, 1955

Construction of Sewage Treatment Plant

NOTICE IS HEREBY GIVEN, that the City Council of the City of St. Cloud, Minnesota, will meet at the City Hall in said City on the 1st day of March, 1955, at 2:00 o'clock P.M. for the purpose of receiving, publicly opening, reading aloud, and considering sealed bids for the construction of a complete sewage treatment plant in and for the said City.

The extent of the work, kinds of materials, and methods of construction to be as shown by the plans and specifications on file in the office of the City Clerk where they may be examined by interested parties, or they may be obtained for personal use from Buell and Winter, Engineers, Sioux City, Iowa upon deposit of $50.00, all of which will be refunded to bona-fide bidders for this work, upon the return of said plans and specifications in good condition within fourteen days after the date set for receiving bids.

All of the work to be done will be awarded as one contract, and the said work will consist in general of the following items, to-wit;

Item 1, Influent and By-Pass Chamber
Item 2, Meter and Screen House
Item 3, Grit Removal Chamber
Item 4, Clariflocculators and Scum Box
Item 5, Control Chamber
Item 6, Rock Filters
Item 7, Secondary Lift Station and Control Box
Item 8, Secondary Clarifiers
Item 9, Final Control Box
Item 10, Chlorine Contact Tank
Item 11, Final Parshall Flume
Item 12, Digesters
Item 13, Sludge Beds
Item 14, Administration Building
Item 15, Plant Piping Concrete Flumes
Item 16, Electrical Work
Item 17, Plant Site Grading and Drainage
Item 18, Screen and Grit Removal—East Side Collector Sewer System
Item 19, River Crossing Siphons

All bids must be accompanied by a cash deposit, bidders bond, or certified check payable to the City Treasurer of St. Cloud, Minnesota, in an amount equal to at least fifteen per cent (15%) of the amount of the bid.

All bids must be submitted on the bidding form prepared for this purpose and must be securely sealed and marked upon the wrapping with the bidder's name and address, together with a statement identifying the work for which the bid is submitted.

Bids must be delivered to the City Clerk prior to the scheduled closing time for receiving bids.

Bids may not be withdrawn within a period of thirty days from and after the scheduled closing time for receiving bids, and the City reserves the right to reject any or all bids, and to waive informalities.

Payments for the work will be made by the City in cash, with monthly estimates paid as the work progresses, in the amount of ninety per cent (90%) of the value of completed work.

Dated at St. Cloud, Minnesota, this 3rd day of January, 1955, by order of the City Council.

R. W. TEAGUE
CITY ENGINEER

Bids: March 9, 1955

Power Authority of the State of New York

FOR
CONSTRUCTION OF
LONG SAULT DAM
NEAR MASSENA, ST. LAWRENCE
COUNTY, NEW YORK
SPECIFICATION NO. PA-5-11002
ST. LAWRENCE CONTRACT NO. 8

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Long Sault Dam and appurtenant works near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Standard Time on the 9th day of March, 1955 at the Authority's office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are:

Estimated		
5,752,000	cu. yds.	Earth or rock excavation for Cut F and channel work
1,189,000	cu. yds.	Embankment and riprap for wing dams, dike and roads
300,000	cu. yds.	Earth excavation for dam
75,000	cu. yds.	Rock excavation for dam
700,000	cu. yds.	Borrow excavation
407,200	cu. yds.	Concrete
2,431	tons	Structural steel
5,809	tons	Erection of gates and cranes
76,000	lin. ft.	Drill holes for exploration and grouting

The work shall be completed on or before December 30, 1958.

Plans, specifications and Proposal Forms for the work will be on file after January 7, 1955 in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, after January 7, 1955 upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set and Twenty-five ($25.00) dollars per set for additional sets no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid except that guarantee in excess of $2,000,000 will not be required.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: February 15, 1955

Kansas City, Missouri

NOTICE TO CONTRACTORS

Missouri River Bridge at Broadway, Kansas City, Missouri, Contract No. 2—Three River Spans—Superstructure Metalwork Fabricate, erect and paint 5300 tons of Structural Steel. Bids to be received by Director of Public Works, 20th Floor, City Hall.

2:00 PM Tuesday February 15, 1955

Plans available at Howard, Needles, Tammen & Bergendoff, 1805 Grand Avenue, Kansas City, Missouri. Price $20.00.

Bids: February 10, 1955

Contract No. DP-2

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

DEMOLITION AND REMOVAL OF BUILDINGS ON PORTIONS OF THE SITE FOR THE DELAWARE RIVER BRIDGE CONNECTING PACKER AVENUE, PHILADELPHIA, PENNSYLVANIA, AND GLOUCESTER, NEW JERSEY

Sealed bids will be received for Demolition and removal of buildings on portions of the site for the Delaware River Bridge connecting Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey, known as Contract No. DP-2, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M., (Eastern Standard Time), Thursday, February 10, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $5,000.00 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

EMPLOYMENT
AND OTHER BUSINESS OPPORTUNITIES

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

EXPERIENCED ASPHALT Plant operator capable of assuming full charge modern asphalt plant in Northern New Jersey. Send full information as to background and income requirements in first letter to P-5015, Engineering News-Record.

BRICKLAYER FOREMAN—Must be capable of laying out work and securing production and accept responsibility. Free to travel. Apply James McHugh Construction Co., 6449 South Park Avenue, Chicago 37, Illinois. Butterfield 8-4100 (Extension 17, for appointment for interview).

SUPERINTENDENT: TOP-flight highway and bridge superintendent wanted by contractor with headquarters in New England. Must be able to produce and have a following of key men. Must be available within 30 days. Liberal compensation for qualified man. P-5085, Engineering News-Record.

EXPERIENCED OFFICE Engineer-estimator to work for general contractor, New York-New Jersey area. P-5054, Engineering News-Record.

NEW YORK-New Jersey firm seeks experienced outside construction man as general superintendent-project manager. P-5053, Engineering News-Record.

PROJECT SUPERINTENDENTS — To completely handle in field complete mechanical contract portions of large industrial and institutional building projects. Middle Atlantic States. Give complete details, including projects handled and dollar value, age, references and salary expected. P-5059, Engineering News-Record.

DESIGN ENGINEERS—Men having experience in design and prepartion of drawings and reports for Sanitary Sewer, water distribution and municipal-type storm drainage systems. Good pay for qualified men with training and experience. Opportunity for advancement. Furnish full information regarding education, training and experience, age, references and salary required. Replies strictly confidential. P-5082, Engineering News-Record.

WANTED—CIVIL Engineering graduate for half-time work in prestressed concrete research at university in eastern Pennsylvania. Opportunity for MS or PhD degree. Salary $120, per month with tuition paid. Address reply to P-5021, Engineering News-Record.

JUNIOR CIVIL Engineer wanted by the City of Highland Park, Michigan. Salary $4472.00 to $4825.00. Retirement, sick leave and vacation benefits. Apply room 4, 30 Gerald, Highland Park 3, Michigan.

SALESMAN WANTED—Crane, shovel, and front end loader experience desirable. North Jersey territory. Salary open. Reply P-5158, Engineering News-Record.

DRAFTSMEN, STRUCTURAL, Midwestern structural fabricating plant has permanent openings for young draftsmen with at least three years experience in detailing structural and miscellaneous for all types of buildings and highway bridges. All employee benefits, insurance, paid vacations, etc. Reply by letter stating experience and salary requirements to P-5171, Engineering News-Record.

CONSIDERING TOP Administrative and Supervisory personnel in categories of Project manager, job superintendent, general superintendent, coordinator, chief engineer, warehouse superintendent and equipment superintendent preferably with experience on foreign projects in Spanish speaking countries. Send resume to P-5123, Engineering News-Record.

(Continued on opposite page)

CLASSIFIED **SEARCHLIGHT SECTION** ADVERTISING

EMPLOYMENT • BUSINESS • **OPPORTUNITIES** • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for February 10th issue closing January 31st

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DESIGNERS ENGINEERS DRAFTSMEN

HYDROELECTRIC
HYDRAULIC
HYDROLOGIC
WATERFRONT
STRUCTURAL

SEVERAL—in each of these branches—At Project, Senior and Junior level—for immediate and future assignment on New York City staff of international consulting engineer organization. Excellent opportunity for qualified men to establish a career. Complete detailed resumes with current references, earnings record and salary requirements will be acknowledged.

P-5268-Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

REINFORCING BAR DETAILER

for engineering department of our Washington, D. C. plant. Structural design experience helpful but not necessary. Position offers good future with progressive national fabricator. Include education, experience, references and expected salary.

CECO STEEL PRODUCTS CORPORATION
1701 47th Ave., N.E. Washington 27, D.C.
P.O. Box 5139
Telephone: Union 4-5651

DESIGN ENGINEERS

Excellent opportunity for Engineers experienced in design of Filter Plants and Water Works—Bridges and Highways. Recent Graduates also accepted. Good living conditions and Bonus and Pension Plan. Include experience, date available, salary desired in first letter. Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Pa.

CONSTRUCTION SUPERINTENDENT—Expanding company has excellent permanent position open for capable, dependable man experienced in building bridges, pile driving, foundations, earth work, and building construction. Estimating experience required. Illinois—Iowa Operations. Give full details, age, education, experience, references, and salary expected, in first letter.

P-5172, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Steel Sheet Piling Distributors

Steel salesmen or equipment distributors to handle as side line on commission basis rental steel sheet piling in following territories: 1. Maine-N. H., 2. Western N. Y. 3. Virginia, 4. N. C., 5. S C., 6. Northern Ga. 7. Southern N. J., 8 Vt. & N. E. N. Y., 9. E. Tenn. & W. Va.

SW-5266, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

SUPERINTENDENT OF MANUFACTURE FOR CONCRETE PIPE PLANT

Large well-established middlewestern company needs man with minimum of five years experience who carried full responsibility for the manufacture of concrete pipe, block, or allied field to take charge of all activities in plant having 50-man work force. Qualifications include ability to direct and get along with men, production know-how, cost consciousness, technical competence to rebuild present plant, and ideas for constructing new facilities for future expansion program. Age 35 to 45. Good salary and outstanding profit sharing plan. Please reply, giving personal, educational and work history, including present or last salary.

P-5297, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

(Continued from opposite page)

CONSTRUCTION ENGINEER. Growing Alabama contractor wants proven earner to estimate, bid and personally supervise medium size construction. Nominal salary and share in earnings. Only men with highest qualifications considered. Include education, experience, references and earnings expected in first letter. P-5204, Engineering News-Record.

GENERAL SUPERINTENDENT for large general contractor operating in Ohio, Indiana and Michigan to take charge of bridge department. Must have experience in highway bridges, wet excavation, pile driving, coffer dam work, railroad overpass, underpass and relocation. Excellent future for experienced and capable man. Write fully stating experience, education, salary expected and provide references. All replies confidential. P-5233, Engineering News-Record.

RELIABLE FIELD man: unusual opportunity for good sound construction man as field supervisor and trouble-shooter for prestressed concrete construction. Practical, with some engineering fundamentals and mechanical abilities. Advancement unlimited. Must accept responsibilities willingly. Personal habits beyond reproach. Location Southwest. State experience, salary expected, willingness to travel anywhere, availability, references. P-5236,, Engineering News-Record.

BUILDING CONSTRUCTION Superintendent capable of handling jobs up to 5 or 6 million dollar value. Institutional, industrial and commercial work. Must be able to operate construction and oversee all phases of the work, including functions of the job office. Position is with well established rapidly expanding contractor in Northern Ohio. P-5246, Engineering News-Record.

CITY ENGINEER — Wanted by the City of Jackson, Michigan. Must have graduated from a school of engineering of recognized standing, with specialization in civil or structural engineering, and five years of successful experience in the administration, planning, survey, design and construction of engineering work. Professional registration required. Salary range—$7,120 to $8,260. Liberal vacation, cumulative sick leave, excellent retirement benefits, longevity pay benefits. Apply by letter to City Manager, City Offices, Jackson, Michigan.

(Continued on following page)

CIVIL ENGINEERS

Immediate Employment

South America

All applicants must be registered, have a college degree, over 35 years of age with a minimum of 10 years of highway experience, preferably at administrative level.

PROJECT ENGINEER
(Must speak, read and write Spanish)

- * Location Engineer
- * Bridge Engineer
- * Office Engineer

*Require working knowledge of Spanish

Contracts of one to four years duration, with living allowance and family accommodations.

Write giving full particulars on education, personal history and work experience.

P-5250, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

ENGINEERS

Foreign Service

Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30
ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE, NEW YORK 22, N. Y.

CIVIL OR MECHANICAL ENGINEER

As assistant to Head of Engineering with a large organization in grain and allied industries.

DEGREE: (Master's preferable), at least 10 years' experience foundations, steel and concrete design; some experience material handling equipment essential.

HEADQUARTERS: New York City. Some traveling.

Good starting salary, benefits. Mail complete resume, salary requirements to:

P-5267, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

POSITIONS VACANT

(Continued from preceding page)

WANTED — EXPERIENCED structural steel detailers. Reply with complete resume and salary expected. Berger Steel Company, Inc., State Road 552, Lafayette, Indiana.

DESIGN AND Construction Engineers familiar with highway, sewer, water projects. Location, Illinois, Indiana. Positions with vacations, sick leave, profit sharing. Application should include education, experience, salary required. P-5291, Engineering News-Record.

SPECIFICATIONS WRITER with experience in commercial and industrial work. Age about 35 to 40. Salary $3.50 to $3.75 per hour, minimum experience 5 years. Job located in Los Angeles, California. P-5271, Engineering News-Record.

WANTED: CONSTRUCTION executive with experience in estimating, purchasing, contacting owners and architects, and field supervision. Include information on education, experience, references, and complete personal data in application. Hutter Construction Company, 134 Western Avenue, Fond du Lac — Wisconsin.

WANTED: EXPERIENCED asphalt plant erection and operation supervisor who would be interested in factory service man position as career with opportunities. Substantial family man preferred, 35 years or older. Send details. Madsen Iron Works, Inc. Box 38, La Mirada, California.

ESTIMATOR UNDER 50 needed February 1st. Must be experienced in quantity takeoffs, pricing, purchase of material, expediting, drafting and be able to do field supervision. Knowledge of cost systems preferred. We specialize in construction of industrial, commercial and public works. All work competitive. Permanent location, excellent salary and bonus arrangement. Mail or wire qualifications, experience, and availability to M L Haldelan and Son 103 West Chocolate Ave Hershey, Penn.

POSITIONS WANTED

CONSTRUCTION EXECUTIVE, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-5074, Engineering News-Record.

CIVIL ENGINEER age 37. Long experience in heavy construction. Also municipal, highway and office. PW-5000, Engineering News-Record.

CONSTRUCTION STIFF, Rigger, who has worked with lubricating oil for years as a hobby, seeks employment in a modest capacity, with a construction company, or other fleet owner using large quantities of oil, where his information and paraphernalia will be investigated, and where he will be encouraged to go ahead with some things he wants to do. Local or foreign. Sidney Stribling, Sta. 8, Asan, Agana, Guam, M. I.

GEN. SUP'T. Bridge construction thoroughly familiar, all types bridge construction. Sober, willing to relocate. Presently completing 7-structure job. Available immediately. PW-5075, Engineering News-Record.

ASSISTANT SUPERINTENDENT, CE, 25, five years bridge highway and building experience. PW-5192, Engineering News-Record.

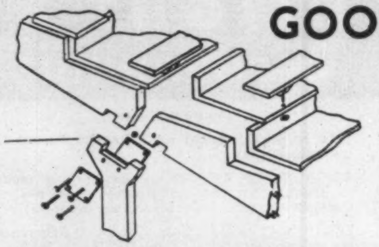
CONTRACTOR'S CHIEF Engineer estimator—age 52—extensive top flight experience in building and heavy construction fields. Assume full responsibility prepare building estimates, any type, any size job. Handle fully usual general contractor routine. Much experience bidding public work. Would consider any location including California. PW-5134, Engineering News-Record.

CIVIL ENGINEER, BSCE, 30 registered, 6 years experience in responsible municipal and municipal consulting positions on pavement, sewerage and water. Desires relocation in northern midwest with municipality or consultant. PW-5166, Engineering News-Record.

CONSTRUCTION ENGINEER — Graduate and registered. 15 yrs responsible experience hydro-power, steam plant and general industrial construction. PW-5164, Engineering News-Record.

CONSTRUCTION EXECUTIVE. Graduate engineer desires administrative, executive or sales position in construction field, or where an executive engineer is needed. Have 30 years experience self-employed in building construction, including work of every description such as schools, hospitals, public housing, military work, commercial and private work. Southern United States, Far West or foreign locations. PW-5142, Engineering News-Record.

CONSTRUCTION ENGINEER, estimator, 12 yrs diversified field & office experience (6 in resp. charge), airfields & facilities, harbor installations, industrial developments, highways, housing. Want responsible engrg. or supv. position, foreign or domestic. PW-5182, Engineering News-Record.



GOOD BUSINESS FOR "CONTRACTORS"

PROFITABLE SALES OPPORTUNITY

Highly profitable franchises available for Sales and Construction of patented, pre-cast concrete Grandstands on a royalty basis. Tremendous sales potential already proven. For use by schools, colleges, county fairs, race tracks, rodeos, etc.

This operation necessitates companies or individuals capable of handling large volume contracts and having experience in sales promotion work. Send for brochure.

- Over 40 "CASTADIA" have been built in the Mid-West

Contact———— CASTADIA, INC.
2242 North 36th Street Milwaukee 8, Wisconsin
Phone—Hilltop 2-5020

POSITIONS WANTED

CONTRACTORS ASST. or General Superintendent: Foreign service preferred. Will work in states on a percentage basis with a minimum drawing account of $12,000. and expenses. Presently employed as Gen. Supt. but wish to make change. 24 years experience on piers, docks, cofferdams,, caissons, river intakes, subaqueous work and design and installation of all types of piles. Design, estimate, negotiate, bid and supervision. Excellent references. Presently averaging $18,000. PW-5230, Engineering News-Record.

REGISTERED CIVIL Engineer. 6 years varied experience all phases heavy construction. Qualify as engineer, estimator or supervisor. Good references. Desire Pudget Sound area. PW-5232, Engineering News-Record.

PROJECT MANAGER or Chief Engineer with twenty years experience in engineering and construction, now employed in a responsible position, desires inquiries from medium size Midwest Construction Company interested in obtaining a man familiar with all phases of general contracting. PW-5234, Engineering News-Record.

MASTER MECHANIC or Equipment Superintendent. Twenty years experience all types heavy equipment. Desire permanent position. PW-5237, Engineering News-Record.

COST AND Office Engineer (27) six years industrial construction wants chance to help contractor save time and money. PW-5238, Engineering News-Record.

CONSTRUCTION EXECUTIVE Engineer broad, varied experience in planning, organization, erection & management of industrial construction projects. 14 yrs. activity in Engineering and Const. field. Desires permanent position with progressive firm. PW-5161, Engineering News-Record.

REG. PROF. Engr. age 39. Experienced in heavy construction equipment and land-clearing operations available to contractor for top management position on salary or profit sharing basis excellent public relations background and ability to negotiate contracts. PW-5241, Engineering News-Record.

CE 3 yrs consulting office, desires office position general contractor. PW-5251, Engineering News-Record.

CIVIL ENGINEER-Attorney at Law, age 27, 5 years sales experience selling construction industry previous to obtaining law degree. Desire responsible position. PW-5255, Engineering News-Record.

ELECT. ENGINEER, has been acting Elect. Supt. in heavy const. industry. Thoroughly experienced in set-up & maint. Sub St'n's, power plants, elect. shovels, mining equipment, etc. Free to travel, can give ref's. PW-5257, Engineering News-Record.

CANADIAN OFFICE Proj. Engr. Age 30 seeks to return East to firm requiring skilled contract administrator unit costs, labor schedules, routine cost changes, budgets, reports, complete buying, all phases, all type bldgs. 13 yrs. exper. here and abroad. PW-5259, Engineering News-Record.

STRUCTURAL-ARCHITECTURAL Draftsman and estimator. B.S. Degree, 25 years old, veteran, married, one child. Four years office and field experience with excellent references. Desire to relocate with good architectural firm, consulting engr. or structural steel fabricator. PW-5287, Engineering News-Record.

MECHANICAL ENGINEER and Construction Superintendent. B.S. Mechanical engineering, two years post graduate electrical engineering, 18 years construction experience heating, ventilating, air conditioning, high pressure piping, large concrete pours, power plant, chemical plant, and general construction experience. Mechanical estimation. Salary commensurate with ability. Available two weeks. PW-5290, Engineering News-Record.

POSITIONS WANTED

SENIOR ESTIMATOR. Reg. P.E. 25 years experience, estimating, purchasing, expediting, and supervision. Thoroughly experienced in all types of const. and engineering. PW-5276, Engineering News-Record.

NAVY CIVIL Engineer Corps Officer being released from active duty in April. BSCE, 25, 4 years experience in plant maintenance and new construction, seeks position with construction firm, preferably in Texas. PW-5298, Engineering News-Record.

CE 3 years consulting office, desires office position general contractor. PW-5299, Engineering News-Record.

PART TIME WORK WANTED

ESTIMATOR; REGISTERED mechanical engineer; 16 years experience, desires part time work. Cost estimation or design work. Location in Md., Dist. of Col., or Va.; special machinery developed. PTWW-4999, Engineering News-Record.

PART TIME work. Retired licensed structural engineer available for design, detailing and estimating. PTWW-5301, Engineering News-Record.

SPECIAL SERVICES

Appeals Service: Construction Contractors, who intend to appeal decisions of the contracting officer concerning disputed questions of fact under government contracts, are offered complete representative service covering analysis, preparation and processing of appeals. SS-5062, Engineering News-Record.

Aggressive Engineering Organization in Caribbean area would like to handle surveys, reports, inspections, etc for U. S. Engineering, architectural, and manufacturing concerns active in this area. SS-5201, Engineering News-Record.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

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48.6 CFM 3500 psi stage Ingersoll Rand 25 HP Elec
122 CFM 100 psi 7x7 Worthington HB 20 HP Elec
125 CFM 100 psi 6¼ x 4½ Davey VB9 6 available
142 CFM 125 psi 6/6/5x5 Worth M-25 25 HP Elec
254 CFM 125 psi 10x10 Ingersoll ER-1 40 HP Elec
268 CFM 500 psi 10/4¼x10 Ingersoll 75 HP Synch.
270 CFM 125 psi Joy WL-60 2 available
278 CFM 125 psi 2 Stage Chicago PB 50 HP Elec
285 CFM 125 psi 2 Stage Gardner "WB" 50 HP
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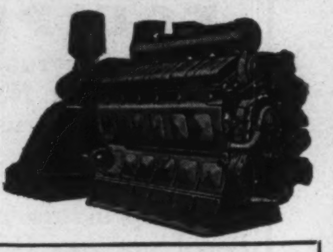

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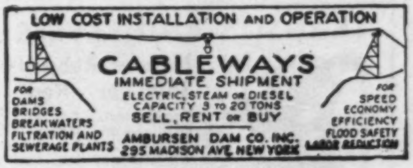

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EDITORIALS

National Public Works Chief

THERE IS MUCH MERIT in President Eisenhower's plan to set up an Office of Coordinator of Public Works in his executive establishment. In effect, the public works planning section in his Council of Economic Advisors has been functioning in this capacity for over a year, and apparently with good results. But the President now wants funds that will enable him to give formal and continuing status to this important function. It is a request that should be granted.

The need for better coordination of federal public works activities has been recognized, or at least talked about, for many years. In the '20's and earlier there was frequent agitation for a Department of Public Works headed by a secretary with Cabinet status. This proved to be too radical a step to take all at once, however, and the proposal was never widely supported.

In the absence of planned coordination something of a substitute appeared in the functioning of the Budget Bureau, which could and did influence the appropriation or denying of funds to specific projects and government departments. But this was after-the-fact control because the planning had all been done before the Budget Bureau came into the picture. The public works section in the President's Council of Economic Advisors was set up largely in an attempt to remedy this situation. But it still lacks stature and, therefore, real acceptance by the government departments which have public works responsibilities.

It will also be recalled that each of the water resources studies made over the past few years has contained a recommendation for a board of impartial review to be set up in the Presidential Office to pass on individual projects. So the idea of some sort of coordination has been kept very much alive.

Actually the problem is much broader than federal water projects, however. As the President pointed out in his State of the Union message, not only are floods, navigation, irrigation and hydro power partly a federal responsibility, but housing, roads, industrial wastes and many other activities enlist federal interest. And this interest becomes particularly important under a concept of using public works as a stabilizing influence in the economy. Then it becomes necessary for someone in the federal government to know, continuously and accurately, the status of advance planning at every governmental level.

Both among federal departments and between the federal government and local state and municipal units, coordination, therefore, is a pressing necessity. One objective, of course, would be to obtain a sensible and logical apportionment of federal funds to various types of work, but another, broader one would be to use public works wisely as a sustaining force for our growing economy. A national public-works chief and his staff, operating as an advisor to the President, could exert a powerful effect in both these directions. The President needs such an advisor, and Congress too should benefit from his activities.

New Emphasis on Public Works

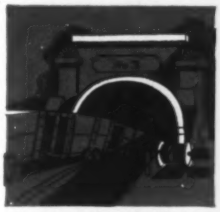
NOT ONLY DID THE PRESIDENT discuss public works in his State of the Union message, but repeated references occurred in his budget and economic reports, with more to come in special messages on highways and schools. This new emphasis on public works is a phenomenon of great significance, both immediate and long term. Its consequences should be far reaching.

It seems plain that the President and his advisors have grasped a simple truth about public works that was lost somewhere during the past two or three decades. It is that public works are a vital and necessary part of national growth and development, and not something to be reserved and only properly brought forth during a depression to provide employment and an economic lift. This "half-belief" in public works, which the latter attitude implies, is more prevalent than would seem possible, and includes a grudging acceptance of most public works undertaken in good times as a devilish device to spend the taxpayers' money by politicians seeking votes.

Public works can, of course, perform a useful function in a depression, but basically their purpose is to furnish services, whose need is just as pressing during good times as bad. Moreover, their economic effect may be as necessary in good times to keep the economy growing as it is useful in bad times to cushion a depression.

Viewed in the light of usefulness, per se or economically, the public works items in the 1956 budget make sense. In total they add up to practically the same as they did in fiscal 1955, but individually they reflect more for housing, flood control, irrigation and military public works. If this seems to suggest merely holding the line economically, and only increasing some public works services while reducing others, it is only because the budget does not tell the whole public works story. Yet to be added are new plans for highways and schools, which if adopted will carry public works, either this year or next, into greatly enlarged dimensions.

Whether this new emphasis on public works is justified rests on decisions with respect to two aspects of the problem. Are the services that will be provided needed? Is the economic effect the expenditures will produce necessary? For a nation wedded to the idea of a continuously rising standard of living and a steadily increasing volume of economic activity, only affirmative answers are tenable. That, at least, seems to be the President's philosophy in placing new emphasis on public works.



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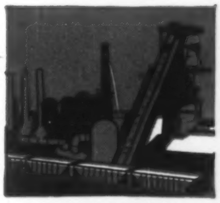

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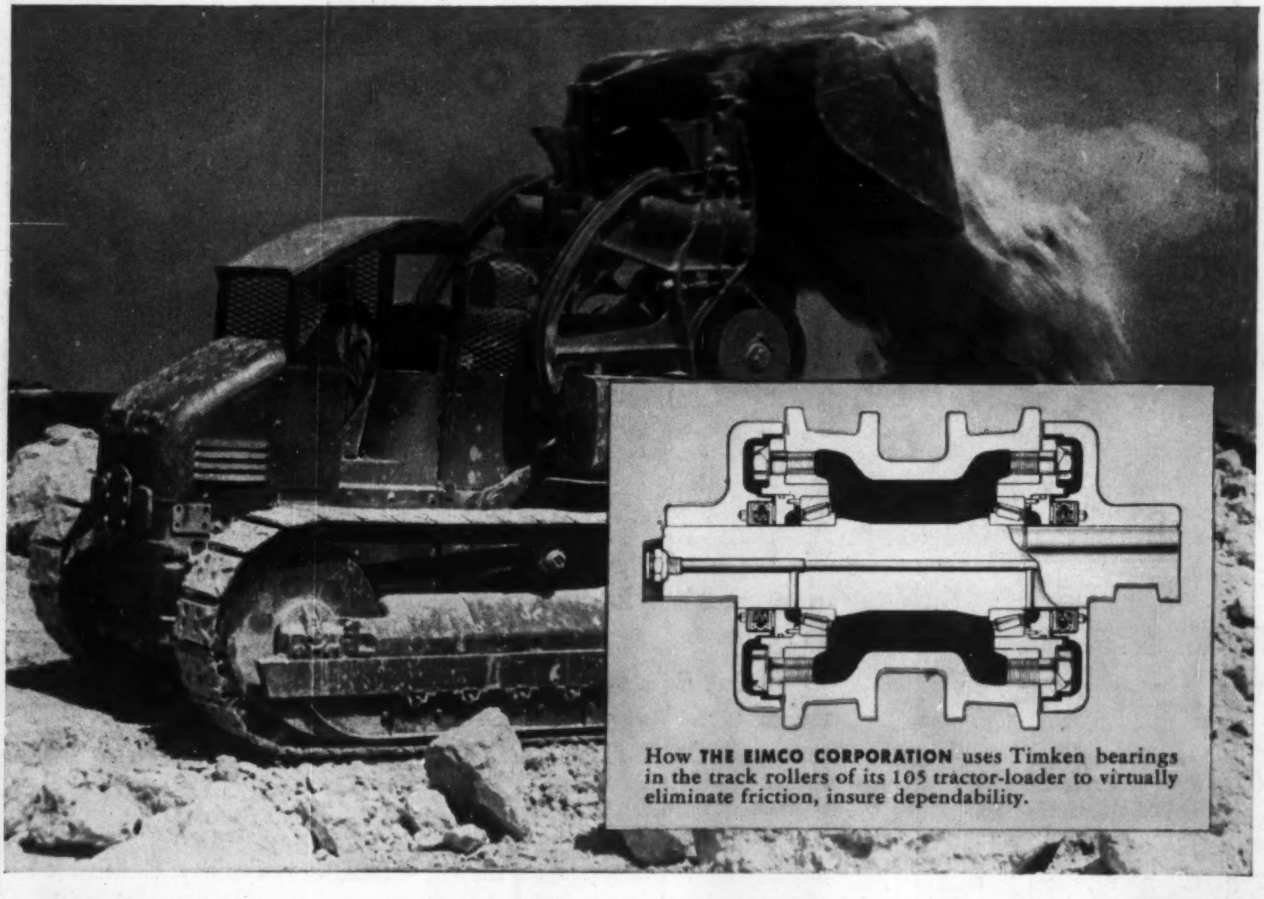

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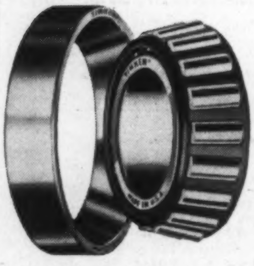

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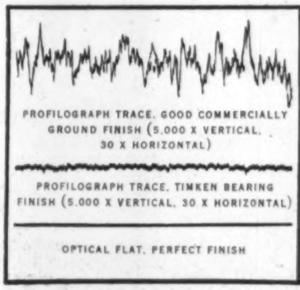

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